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THE

AMERICAN JOURNAL

OF THE

MEDICAL SCIENCES.

VOL. XIV.

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1834.



TO READERS AND CORRESPONDENTS.

Communications have been received from Drs. CHAPMAN, JACKSON, PARRISH, DALTON, MONETT, MILLER, DICKSON, FINLEY, and PERRINE.

The following works have been received:—

Transactions of the Medical and Physical Society of Calcutta, Vol. VI. Calcutta, 1833. (From the society.)

The Value of a Great Medical Reputation, with Suggestions for its Attainment; a Lecture, Introductory to the Summer Course of the Medical Institute. By JOHN K. MITCHELL, M. D., Lecturer on Medical Chemistry in the Philadelphia Medical Institute. Philadelphia, 1834. (From the author.)

Catalogue of the Trustees, Faculty and Students of the Medical Department of the University of Maryland. Baltimore, 1834. (From Professor GEDDINGS.)

An Exposition of the Affairs of the Medical Society of South Carolina, so far as they Appertain to the Establishment of a Medical College in Charleston, and the Subsequent Division of the Latter into two Schools of Medicine. Published by order of the Medical Society. Charleston, 1833. (From the Secretary of the Society.)

An Address, Introductory to a Course of Lectures, Delivered in the Hall of the Medical Society of South Carolina, before the Trustees and Faculty, the Students of Medicine, and the Public generally, at the Opening of the Session of 1833-4. By JOHN R. RHILANDER, M. D. Professor of Anatomy. Charleston, 1834. (From the author.)

Tables Exhibiting the Doses and Properties Ascribed to the Principal Medicines and Officinal Preparations. For the Use of the Medical Class of the University of Maryland. By Professor DUNGLISON. (From the author.)

An Address, Delivered to the Graduates in Medicine, at the Commencement of the University of Maryland, on Wednesday, March 19th, 1834. By Professor DUNGLISON. Published by the Graduates and Students. Baltimore, 1834. (From the author.)

The Medico-Chirurgical Review, for January, 1834. (In exchange.)

The London Medical Gazette, for December, 1833, January and February, 1834. (In exchange.)

The Edinburgh Medical and Surgical Journal, for January, 1833. (In exchange.)

The London Medical and Surgical Journal, for November and December, 1833. (In exchange.)

The Transylvania Journal of Medicine and the Associate Sciences, from October to December, 1833. (In exchange.)

The Medical Magazine, for January, February, and March, 1834. (In exchange.)

The Boston Medical and Surgical Journal. (In exchange.)

The Western Journal of the Medical and Physical Sciences, January, 1834. (In exchange.)

The Western Medical Gazette, Nos. 19, 20, 1834. (In exchange.)

Mémoires Encyclopédique et Progressif des Connaissances Humaines, &c. January to September, 1833. (In exchange.)

For the gratification of our contributors we present references to the works, recently received, in which their communications are noticed.

Professor MOTT will find his case of Excision of Tuberculous Sarcoma from the Neck, noticed in the Gazette Médicale de Paris, Sept. 7th, 1833, and his case of Aneurism of the Arteria Innominata, in the Glasgow Medical Journal, for May, 1831.

Professor WARREN's case of Non-existence of Vagina is copied in the Boston Medical and Surgical Journal, for November 20th, 1833; and his case of Excision of Osteo-Sarcomatous Clavicle in the Western Medical and Physical Journal, for January, 1834.

Professor HORNER's Experiment on the Vascular Connexion of Mother and Fœtus is noticed in the Cincinnati Medical Gazette, for Sept. 1st, 1833; and his case of Ligature of primitive Carotid in the Archives Générales, April, 1833.

Dr. JACKSON's cases of Croup are noticed in the Glasgow Medical Journal, for January, 1833.

Dr. S. JACKSON's Observations on the Use of Cold Water in Scarlatina Maligna are noticed in the Boston Medical and Surgical Journal, for October 16th, 1833, the Western Journal of the Medical and Physical Sciences, for October, 1833, the London Medical and Surgical Journal, for August, 1833, and in the Gazette Médicale de Paris, September 7th, 1833; his paper on the Use of Rhubarb in Hæmorrhoids is noticed in the Glasgow Medical Journal, for January, 1833.

Dr. HODGE's Memoir on Puerperal Fever is noticed in the Western Journal of the Medical and Physical Sciences, for October, 1833.

Dr. J. K. MITCHELL's cases of Rheumatism are noticed in the Western Journal of the Medical and Physical Sciences, for October, 1833; and his case of Spasm cured by Ligature in the Archives Générales, April, 1833.

Dr. PERRINE's observations on the Use of Large Doses of Quinine are noticed in the Transylvania Journal of Medicine, for July, 1833.

Dr. FAHNESTOCK's case of Partial Congestion of Cerebrum is copied in the Transylvania Journal of Medicine, for July, 1833, and in the Gazette Médicale de Paris, for September 7th, 1833.

Dr. WRIGHT's observations on Hospital Gangrene are noticed in the Medical Magazine, for August, 1833; and his Illustrations of Cardiac Pathology in the

London Medical and Surgical Journal, for August, 1833, and in the Gazette Médicale de Paris, for September, 1833.

Dr. C. A. LEE's observations on Cold Dash in Nervous and Convulsive Diseases are noticed in the Cincinnati Medical Gazette, Vol. I. No. 17, and in the Western Journal of the Medical and Physical Sciences, for October, 1833.

Dr. W. M. LEE's case of Splenitis is noticed in the Cincinnati Medical Gazette, Vol. I. No. 17.

Dr. GRISCOM's account of the Apocynum Canabinum is noticed in the London Medical Gazette, for November, 1833, and in the Gazette Médicale de Paris, for September 7th, 1833.

Dr. METTAUER's case of Parturient Laceration of Recto-vaginal Septum is copied in the Boston Medical and Surgical Journal, for November 20th, 1833.

Dr. ROBINSON's case of Monstrosity is noticed in the Gazette Médicale de Paris, for September 7th, 1833.

Dr. WILLIAMS' case of Stricture of Vagina is noticed in the Gazette Médicale de Paris, for September 7th, 1833.

Dr. HEUSTIS' case of Prolapsus of Rectum is noticed in the Gazette Médicale de Paris, for September 7th, 1833.

Dr. WARD's case of Vagitus Uterinus is noticed in the Gazette Médicale de Paris, for September 7th, 1833.

Dr. ZOLLIKOFFER's remarks on the Euphorbia Corollata are noticed in the Gazette Médicale de Paris, for September 7th, 1833.

Dr. YOUNG's remarks on the Use of Cimicifuga Racemosa in Chorea are noticed in Broussais' Annals, for December, 1833; in the Glasgow Medical Journal, for January, 1833; in the Western Journal of Medical and Physical Sciences, for January, 1834; and his case Illustrative of the Use of the Cold Affusion for the recovery of persons struck with lightning is noticed in the Western Journal of Medical and Physical Sciences, for January, 1834.

Dr. ATLEE's remarks on the Use of Prussic Acid in Hooping-Cough are noticed in the Gazette Médicale de Paris, for January 31st, 1833.

Dr. WELLS' case of Tracheotomy for the Removal of a Foreign Body is noticed in the Glasgow Medical Journal for January, 1833.

Dr. BALDWIN's case of Tetanus treated with success is noticed in the Gazette Médicale de Paris, for September 7th, 1833.

Dr. PORCHER's case of Retained Placenta is noticed in the Transactions Médicales, for April, 1833, and in the Gazette Médicale de Paris, for July 13th, 1833.

Dr. PICTON's observations on the Utility of Excluding the Light, to prevent Pitting from Small-pox, are noticed in the Gazette Médicale de Paris, for February 5th, 1833.

Dr. VALK's cases of Traumatic Tetanus are noticed in the Boston Medical and Surgical Journal, for January, 1833.

Dr. YOUNGE's remarks on the Utility of Calomel in Pruritis, are noticed in the Boston Medical and Surgical Journal, for December 25th, 1833.

Dr. JOSLIN's observations on Vision are copied in the Archives Générales, for February, 1833, and noticed in the Ann. de la Med. Phys. for March, 1833.

Dr. PARRISH's paper on Spinal Irritation is noticed in the Archives Générales, for March, 1833, in the Review Médicale, for June, 1833, in the Transactions Médicale, for April, 1833, and in Ann. de la Med. Phys. for April, 1833.

Dr. HALL's case of Extirpation of Testicle is noticed in Archives Générales, for March, 1833.

Dr. ANDERSON's case of Amputation of Lower Jaw is noticed in Archives Générales, for April, 1833.

Dr. LE BEAU's case of Precocious Puberty is noticed in the Revue Médicale, for June, 1833.

Dr. MONETT's observations on the Sulphate of Quinine, are noticed in the Western Journal of Medical and Physical Sciences, for January, 1834.

Dr. LABRISKIE's case of Amnesia is noticed in the Boston Medical and Surgical Journal, for March 12th, 1834, and his case of Pityriasis rubra in the same journal.

Authors of new medical books, desirous of having them reviewed or noticed in this Journal at the earliest opportunity, are invited to transmit to the *Editor* a copy as soon after publication as convenient, when they will receive prompt attention. Under ordinary circumstances, very considerable delay is caused by the circuitous routes through which they are received.

Papers intended for publication, should be sent, *free of expense*, as early after the appearance of the Journal as possible, in order to be in time for the ensuing number. Such communications should be addressed to "CAREY, LEA & BLANCHARD, Philadelphia, for the Editor of the American Journal of the Medical Sciences."

All letters on the *business* of the Journal to be addressed exclusively to the publishers.

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M. D., F. R. S., Member of the Royal Academy of Sciences, and Royal Academy of Medicine of Paris, of the Philomathic Society of the same city, and of the Medical Society of Dublin, &c. Translated from the French, by Dr. Hodgkin and Dr. Fisher. To which are added, in the Appendix, Some Observations on Electricity, by Dr. Edwards, M. Pouillet, and Luke Howard, F. R. S.; On Absorption, and the Uses of the Spleen, by Dr. Hodgkin; on the Microscopic Characters of the Animal Tissues and Fluids, by J. J. Lister, F. R. S. and Dr. Hodgkin; and Some Notes to the work of Dr. Edwards. London, 1832. 8vo. pp. 488 150

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- New Observations upon the Physiology of the Liver and the Uses of the Bile, and upon the General Subject of Digestion. By Benjamin Voisin, M. D. - - - - - 201
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THE
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ART. I. *Observations of the Remedial Effects of the Balsam of Copaiba in Catarrh and Irritability of the Bladder, and in Leucorrhœa; with Cases.* By R. LA ROCHE, M. D. of Philadelphia.

CHRONIC catarrh of the bladder is generally, as every practitioner must be aware of, a dangerous and often a highly painful disease. In many cases it is of a secondary nature, arising from organic degeneration of the various coats of the bladder, from the presence of foreign bodies in the cavity of that viscus, or from diseases of the annexed organs; while in other instances, the cause of the formation of the fluid discharged is to be sought for in a chronic irritation of the mucous follicles or of the substance of the internal lining of the bladder—the sequel of acute inflammation, the effect of a translation of irritation from some other organ, or the result of the suppression of a gonorrhœal discharge. It is evident that in the former class of cases,—those in which the disease is secondary or symptomatic, little benefit can be expected from the employment of means directed against the chronic irritation—the immediate cause of the increased secretion; inasmuch as before this morbid state can be corrected, the remote cause, the original disease, must, if possible, have been removed. If such means are occasionally found advantageous, they act only as palliatives. In those instances, however, in which the catarrhal symptoms arise from a simple and primary chronic secretory irritation of the lining membrane of the bladder, and in which the disease assimilates to catarrhal inflammations of other organs, the case is very different, and the object of the practitioner should be to select such remedies as are calculated to remove the morbid state in question.

To present a monograph of catarrh of the bladder—to offer an account of the symptoms, causes, nature, and treatment of that disease, might doubtless prove interesting and useful to some of the readers, and is a task which, though not devoid of difficulty, I should gladly undertake. But as it would occupy more time and space than can be conveniently spared on the present occasion; and as, in fact, it is rendered to a certain extent unnecessary by a reference for valuable information on those subjects, to works of easy access, I shall abstain from entering into details upon them, and leave the task to other hands, or postpone it to another and more proper occasion. The object of the present communication, will be to lay before the reader some facts in relation to the effects of the balsam of copaiba in the treatment of the disease above-mentioned, and to show that, if properly administered, and if the cases are carefully selected, this remedy will be found highly efficacious, as a curative means, in a large proportion of cases of the primary form of the complaint, and may be prescribed, as a useful palliative, when the symptoms arise from a secondary derangement of the affected membrane. In presenting the results of my experience on this subject, it is very far from my intention to lay any claim to novelty of practice; for I am fully aware that the balsam of copaiba has long been employed and recommended in this disease, and that it is frequently mentioned in various publications we possess on the diseases of the urinary organs and on the materia medica, as well as in many periodical works of the last and of the present centuries. CARTHEUSER* remarks that the copaiba is useful in ulceration of the bladder; a condition of tissue which, at the time he wrote, was almost universally thought to exist whenever there occurred a discharge of mucous or purulent matter from any part of the body. HOFFMAN† speaks in high terms of its effects in the same complaint. At a much later period, Dr. STROEM‡ related a remarkable case of the disease which he treated successfully by means of the same remedy. The copaiba was likewise used with complete success by Dr. BRETONNEAU, of Tours, in a case of chronic inflammation of the lining coat of the bladder, brought on by the discharge into that organ of the contents of an abscess situated in the neighbourhood. § Mr. CUMIN, in the article Cys-

* Materia Medica.

† Obs. Phy. Chim. p. 24.

‡ Rapport sur les Travaux de la Société Médicale de Suède. Bibliothèque de Therapeutique, 1. p. 412. Diction. de Mat. Med. 2. art. Copahu.

§ Velpeau—Mémoire sur l'Emploi du Baume de Copahu en Lavement. Arch. Générales de Méd. 13, p. 44. Bibliothèque de Therap. 1. p. 389.

titis, contained in the London Cyclopædia of Practical Medicine,* remarks that in cases of the disease occurring in enfeebled constitutions or scrofulous habits, the balsam of copaiba is used with greater advantage than astringents or the other stimulants of the urinary organs. RIBEST employed it with success in cases of the disease resulting from suppressed gonorrhœa. BARBIER, of Amiens,† and LALLEMAND, of Montpellier,§ speak of it as of a useful remedy in catarrh of the bladder. CHRESTIEN,|| the author of a remarkable work on the Iatralaptic method, prescribed it in combination with turpentine, in small and repeated doses; and, finally, the late Professor DELPECH, of Montpellier,¶ remarks that he has succeeded in the most satisfactory manner in curing, by means of the copaiba, the gonorrhœal inflammation of the bladder, even when the disease was of long standing and had already assumed a very formidable character. This distinguished writer relates several cases of the kind, and makes the following remarks, which show the value he attached to this remedy in the treatment of the disease in question. “Even did we think it proper to renounce the use of these two remedies, (the bals. copaiba and cubebs,) in order to combat by ordinary means simple gonorrhœa—a practice which we are very far from regarding as justifiable, we should not the less persevere in the use of them in so serious a complaint, (catarrh of the bladder,) and thereby prevent the incurable infirmity which is the least of the evils to be apprehended from it.”

The circumstance of the copaiba being spoken of by many physicians of high repute, as a useful and even efficacious remedy in the disease which forms the topic of these remarks, may perhaps be regarded by some as sufficient to render further details on the subject unnecessary. Nevertheless, when it is borne in mind that by a very experienced practitioner, Dr. FERRUS,** and several other writers, the remedy is represented as far inferior to turpentine in that complaint; that by many physicians who have published their views relative to the treatment of the latter, no mention at all is made of copaiba; and that it is often neglected in Europe and this country by those who can have no reasons to fear or doubt its effects, the reader

* Volume 1, p. 505.

† Bulletin de la Société Méd. d'Emulation, Sept. 1822, p. 349. Biblioth. de Therap. 1, p. 359, &c.

‡ Mat. Med. 2, p. 120.

§ Maladies des Voies Urinaires.

|| L'Huillier—Thèse sur le Catarrh de la Vessie, Montpellier, 1826, p. 22.

¶ Clinique Chirurgicale de Montpellier, 4to. vol. 1, p. 271. Revue Médicale, 403. Biblioth. de Therapeutique, 1, 370.

** Dict. de Méd. vol. 6, p. 331.

16 La Roche on *Copaiba* in *Catarrh* of the *Bladder*, &c.

will at once perceive the propriety of adding such facts to those already before the public, as appear likely to corroborate what has been said by preceding and contemporary writers on the subject of its remedial virtues.

Of the several cases of catarrhal irritation of the bladder in which I have myself resorted to the *copaiba*, or seen it used by others, I shall only offer the details of three, which appear to be sufficiently interesting to deserve a notice, and well calculated to demonstrate the efficacy of that remedy.

CASE I.—A French gentleman, about sixty years of age, long a resident of this city, was seized in the year 1822, without any assignable cause, with acute inflammation of the bladder. By means of antiphlogistic and emollient remedies, which were prescribed by the attending physician, the late Dr. MONGES, the most violent and inflammatory symptoms were in a few days subdued, and in a short time the patient was sufficiently relieved to leave his bed and even his room. Nevertheless, the disease was rather mitigated than effectually cured. The irritation assumed the chronic form, and was attended with a copious secretion of mucoso-purulent matter, frequent desire to make water, some difficulty in passing it, and pain at the neck of the bladder. As, however, the patient suffered much less than he had done at the commencement of the attack, and as he had recovered some strength and appetite, he fancied that his complaint was of very slight importance, and completely devoid of danger, and that it should therefore be left to the powers of nature. In conformity with these notions, after making use, during a short time, of appropriate remedies, he positively refused to adhere to any plan of regimen, or to follow any method of treatment. Of the impropriety of this course, however, he soon had a distressing proof, for before a week had elapsed, the pain, difficulty of making water, frequent desire of voiding that fluid, and the other symptoms became considerably aggravated; in short, the patient experienced a complete relapse. By a timely application of the means above enumerated, and which were now prescribed by Dr. Monges and myself, the inflammatory symptoms were once more subdued, and the irritation again assumed the chronic suppurative form. An examination was now made, which enabled us to ascertain that the prostate gland was slightly enlarged, but that the urethra was free from obstruction.

The aggravation of the disease, resulting evidently from a total neglect of the remedial and hygienic means recommended, together with the pain he experienced, and the large quantity of mucoso-purulent matter voided with the urine, alarmed the patient, and serv-

ed to open his eyes to the necessity of having recourse seriously to professional advice, and of submitting to an appropriate treatment. Antiphlogistics, proportioned to the strength of the pulse and to the state of the system, were employed with a view to diminish, or if possible, to subdue entirely the remnant of inflammatory action existing in the diseased membrane, and to prepare the latter for the operation of what have been denominated the stimulants of the urinary organs; and further, for the purpose of removing a gastro-intestinal derangement under which the patient now laboured. These objects being at length attained, and several remedies having been tried ineffectually to arrest the secretory irritation of the bladder, the balsam of copaiba was prescribed in moderate doses. Aided by a few others, which were from time to time employed in order to remove the symptoms of irritation supervening in the digestive and other organs, and subsequently by moderate exercise and mild bitters, this remedy succeeded to the fullest extent of our wishes. Under its use the pain gradually diminished, and, together with the difficulty and frequent desire to void the urine, finally disappeared entirely. The secretion of mucoso-purulent matter became less and less copious, and at length ceased completely; the matter discharged assumed gradually a lighter colour and thinner consistence; and the patient after submitting to treatment during several months—the use of the copaiba being in the course of that period discontinued and resumed several times, to avoid its irritating effects—had the satisfaction of finding himself completely relieved of the painful and dangerous disease I have described.

After enjoying good health during about eight years, this gentleman experienced another attack of the same complaint, under which he finally sank. But in respect to the nature of the attack, to the real condition of the coats of the bladder, or of the prostate gland, and to the remedies employed, I know nothing, as the case came under the care of another physician, from whom I have not been able to obtain any information.

CASE II.—The next case I shall mention is that of a gentleman, aged about sixty-five years, and who, after residing during a considerable portion of his life in Philadelphia, removed to the state of Ohio. On my way to the south, in 1825, I made a short stay in the place of his residence, and soon after my arrival was requested to visit him. I was informed that he had suffered to a greater or less extent from disease of the bladder during more than two years. He was much emaciated, and was stretched on a settee, from which he could with difficulty move, on account of debility. The pain in the blad-

der was very severe, and much aggravated by walking. The desire to void water was frequent, and the discharge was attended with some difficulty. Together with the urine, the patient voided a large quantity of mucoso-purulent matter. The digestive functions were impaired, the appetite was much diminished, the bowels were constipated, the skin was dry and warm, and the pulse accelerated.

I was at the same time informed by the patient that much difference of opinion had existed among the physicians, who, at various periods, had attended him, in relation to the nature of his disease, and to the treatment required for its cure. That some had attributed his sufferings to a disease of the prostate gland, and had treated him accordingly; that by others the symptoms were all referred to the existence of strictures in the urethra, which were endeavoured to be removed by bougies, caustic, &c.; that besides external and mechanical means, a variety of internal remedies had been resorted to, and that among these the balsam of copaiba had been tried. But none of these methods of treatment or remedies seemed to have been serviceable; for the patient declared that so far from having improved during the time, his complaint had increased and continued to do so every day.

At the period of my visit he was no longer under the care of a physician, and had discontinued the use of internal remedies; limiting himself to the occasional introduction of a catheter to facilitate the discharge of urine, and to the frequent use of the tepid bath to soothe the irritation and pain of the bladder. My first impression was that the disease depended chiefly upon an obstruction at the neck of the bladder, arising from strictures or from an enlargement of the prostate gland. This view of the pathology of the case I was led to adopt, not only from a survey of the symptoms, but from being informed that the patient had, at an early period of life, experienced several attacks of gonorrhœa,—the usual excitant of the above-mentioned complaints, and that, about ten years before, he was seized, while at sea, with inflammation of the neck of the bladder, attended with pain, fever, retention of urine, &c. In order to ascertain the fact in a more positive manner, I passed a bougie, and next a catheter, along the urethra, but did not experience as much difficulty in penetrating into the bladder as had been anticipated. By a different examination, the prostate was found a little larger than in the natural state, though not sufficiently so to produce an obstruction in the passage; nor did it appear to be otherwise diseased. To this it may be added, that the difficulty experienced in making water and the pain attending this operation, were generally greatly relieved on the passage of a portion

of the tenacious matter above-mentioned, which seemed to act as a plug at the neck of the bladder, and to occasion the greater part of the difficulty. These results very naturally led me to doubt the correctness of the views already stated, and to conclude that the affections of the urethra and prostate gland, though sufficiently marked to deserve attention, were not of a character to account for the symptoms, and that the principal complaint was seated in the bladder itself.

The treatment recommended was based on the above-mentioned view of the seat and nature of the case. It consisted chiefly of those means which appeared calculated to remove the chronic inflammation of the bladder, to diminish the secretion of the mucoso-purulent matter, and restore the digestive organs to their healthy condition. Leeches were accordingly directed to be several times applied to the perinæum and hypogastric region, and, in the event of their not being procured, cupping to the sacrum was recommended as a substitute. The tepid bath was ordered once or twice a day; emollient injections and drinks; the occasional use of castor oil, or of any other mild purgative, to obviate the effects of constipated bowels; opiates, to procure sleep, and light nourishment, were likewise enjoined. Finally, directions were left with the patient to commence the use of the balsam of copaiba in small and repeated doses, in a mild bitter, as soon as the irritation of the bladder should be somewhat reduced by the above-mentioned means, and the state of the gastro-intestinal organs would permit.

The next day I left the place for the south, and on my return, six weeks after, was informed by a friend who visited me on board of the steamer, that the gentleman whose disease has just been described was probably better, inasmuch as he was now able to walk about the town. On reaching this city I sought further information from the patient's friends and learned that he had repeatedly stated in his letters, that the *remedy* prescribed by me had had the desired effect—that he was comparatively well, and experienced little or no inconvenience from his painful disease.

This gentleman suffered some time after a severe relapse, and had recourse to the same means, and with an equally happy result. After enjoying a tolerable share of health during two or three years, he again became a sufferer from disease of the bladder; the obstruction in the urethra increased gradually and at length became almost unconquerable, except by mechanical means; the pain became more and more severe; the discharge of mucus from the bladder increased, was attended with pain, and effected with considerable difficulty. In this condition he removed to Philadelphia, and in the spring

of 1829, once more placed himself under my care. The usual remedies for complaints of that kind were resorted to under the direction of two of the ablest surgeons of the city and myself; but were not productive of the least amelioration. The patient wasted away, and after suffering unexampled agony during several months, sank into the grave. On examination after death, an ill-conditioned ulcer of the bladder, (in the centre of which was found a small calculus,) was discovered. The prostrate gland was slightly enlarged.

CASE III.—In June, 1831, I was requested to visit Mr. R. of this city, aged about fifty years. He informed me that he had for some time past suffered considerably from pain in the bladder, particularly when he endeavoured to retain his urine; that the desire to void that fluid was very frequent, and that it usually contained a large quantity of thick whitish matter, which was discharged in flakes—principally after the urine itself had been passed, and settled at the bottom of the recipient. The disease had come on gradually, and was at first attended with so little pain and inconvenience that it hardly attracted the attention of the patient, and caused no uneasiness. From this circumstance it was allowed to run on a considerable while before recourse was had to professional advice. Mr. R. had laboured under a gonorrhœal attack, which subsided a week or two prior to the accession of the symptoms above-mentioned. At the period of my visit, the symptoms had become rapidly aggravated, and the patient was so much indisposed as to be obliged to keep his bed. He complained, independently of the affection of the bladder, of gastrointestinal derangement, loss of appetite, thirst, slight nausea, constipated bowels, furred tongue, and pain in the head; and had, besides, a hot skin and a febrile pulse.

Having ascertained by means of a catheter, and by the introduction of the finger up the rectum, that there existed neither stricture in the urethra nor enlargement of the prostate, it appeared that the indication was simply to remove the irritation of the mucous coat of the bladder, and to correct the morbid state of the gastric organs, on both of which diseases the febrile excitement probably depended. Leeches were freely applied to the perineum and above the pubes—emollient injections into the bowels and bladder were ordered, and the patient was subjected to the routine of remedies, drinks, &c. usually prescribed under circumstances of the kind. But although adhered to with scrupulous care, this plan of treatment was not as rapidly beneficial as had been anticipated, and some time elapsed before decided relief was obtained. As soon as the symptoms of acute irritation of the bladder had given way, and the mor-

bid condition of the gastro-intestinal organs and the excited state of the arterial system had been amended, astringents, tonics and chalybeates, were successively resorted to, with a view to put a stop to the increased and deranged secretion of the bladder. But none of these remedies, or the terebinthines, were of much avail. Indeed, under the use of some of them, the inflammatory symptoms seemed disposed to return, and it was found necessary not only to discontinue the use of them, but to have recourse occasionally, to emollient and even to moderate antiphlogistic means.

The balsam of copaiba was the next remedy tried; but it at first disagreed with the stomach; laudanum was added, and various vehicles, (among which weak claret and water were found to answer best,) were tried. At length, however, the medicine was made to sit well on the stomach, and although administered in small doses, and discontinued occasionally for a day or two at a time, in order to guard against gastric irritation, it produced in about two weeks the most decided benefit. The irritation of the bladder decreased in a gradual but steady manner—the desire to make water became less frequent, the discharge of mucus diminished and after a while ceased entirely; and the patient was at length completely relieved of the distressing and painful symptoms under which he had so long laboured.

It is deserving of mention in this place, that during the course of the treatment, the gonorrhœal discharge made its appearance, and continued some days, without, however, occasioning any relief to the affection of the bladder. It is now nearly three years since this cure was effected, and the patient has continued free from all uneasiness about the urinary organs, and in the enjoyment of perfect health.

It must appear evident to all who peruse these pages, that the balsam of copaiba was signally useful in the above cases, and constituted, in fact, the principal means of bringing about the favourable results I have recorded. Cystitis being always, though more particularly when it assumes the chronic form, and attacks persons of advanced age, a protracted and dangerous disease, it is hardly possible to deny, that the individuals who were the subjects of those cases, were fortunate in being so speedily—I speak comparatively—relieved. If this be admitted, we must allow, also, that the remedy which acted so conspicuous a part in their cure, is entitled to more commendation than is now usually bestowed upon it, and should be regarded as a highly useful article in the treatment of the disease in question. In all the above cases,

the benefit obtained from the copaiba was, as must have been perceived, not long in manifesting itself; for the first patient was enabled very soon after commencing the use of that remedy to walk out for exercise; the second had so far recovered in the space of five weeks as to be able to leave his room, to which he had long been confined, and to walk about the town; while in the third case, relief was obtained in a much shorter time than in either of the preceding.

It is not impossible that by some it may be objected, that those individuals might have been cured without the aid of the copaiba; and that there is no proof of the cure being attributable to that remedy rather than to the other means employed. In reply, it may be remarked, that no doubt can be entertained of many cures of chronic catarrh of the bladder being effected without the aid of the copaiba. To maintain the contrary would be equivalent to representing that remedy as the only one capable of being of service in that complaint, which would be not only inaccurate, but absurd. It is moreover highly possible—I will not say certain—that in the very cases in question, success might have been obtained without it. But neither of these circumstances appear calculated to detract from the praise bestowed upon the copaiba, since we have yet to discover the article of the materia medica so indispensably requisite for the treatment of any disease as not to be dispensed with, with perfect safety and with a fair chance of success, in many cases. Nor is it less true, that when we succeed with one remedy in the treatment of a disease, it is not always easy to prove in a conclusive manner that it is entitled to the honours of the cure. Nevertheless, although there may sometimes exist room for cavil and disputation on that subject, we are enabled, by comparing the effects of a remedy in a variety of cases of the same complaint, with those of other articles, and by observing the modifications which take place in the symptoms after their exhibition, to arrive at a tolerably accurate conclusion respecting the degree of the agency of each in occasioning those modifications. Hence, when an individual who has laboured during some time under a disease, makes use of a particular remedy, and when shortly after commencing it, the symptoms begin to yield and gradually disappear, we may safely conclude, particularly if similar results have been noticed after the exhibition of the remedy in other cases of the same complaint, that the benefit obtained is due to that remedy. The correctness of this conclusion is rendered still more apparent if the disease belongs to that class, which, when left to the recuperative powers of the system, are seldom if ever cured, and if it has been ineffectually combated by other means

prior to the employment of the successful one. Now it need hardly be remarked, that this is precisely what took place in regard to the copaiba in the cases above described; for the catarrh of the bladder is seldom if ever cured without the aid of art; in each instance the patient had suffered considerably before the remedy was employed; and in all, the relief obtained followed very closely its exhibition. With these facts before us it would be scarcely reasonable to entertain any doubt respecting the beneficial agency of the copaiba in the cases detailed. As the other means employed, at the same time or shortly before, consisted, except in one case, of antiphlogistics and emollients, which, so far as my information extends, have never alone cured a case of suppurative or secretory irritation of the bladder, it is not presumable that any other effect can be attributed to them than that of having moderated the irritation of the organs primarily and secondarily affected, and prevented it from transcending the degree compatible with the advantageous administration of the copaiba.

Some difference of opinion prevails among practitioners in respect to the quantity in which the balsam of copaiba should be administered to insure it success in the disease which forms the subject of these remarks. Messrs. Delpech, Ribes, and others, prescribe it in very large, while other physicians prefer using it in small and repeated doses. So far as I am able to pronounce from the facts I have had occasion to observe, I am disposed to think that the copaiba answers as beneficial a purpose in the catarrh of the bladder, when administered in the latter, as in the former dose; and that when thus given, either in cold water, in milk, or mucilage, or in a slightly aromatic infusion, according to the condition of the diseased parts or of the system at large, there is much less risk of distressing and irritating the gastro-intestinal organs. Another advantage accruing from that method is, that the physician is thereby enabled to persevere in the use of the copaiba during a much longer period than when he administers it in drachm and table-spoonful doses; as in the latter case it is more apt to pass off by the bowels—it is less effectually absorbed—the system becomes less certainly, as it were, impregnated with it, and less time is afforded for obtaining the desired effect on the diseased membrane.

It is, I hope, almost a work of supererogation to remark, that in advocating the use of the copaiba in chronic cystitis, it is far from my wish to recommend it as an infallible remedy. So far from this, I am ready to admit that cases occur in which, although the state of the gastro-intestinal canal,—the degree of irritation in the

bladder, and the condition of the arterial system may seem to indicate the probability of success, this remedy fails completely. In other instances the advantages resulting from its use are of a very restricted nature; and in a third set of cases, the symptoms of irritation are aggravated soon after the remedy begins to pass off with the urine, although it would have been natural to anticipate a very different result. But these cases, particularly the last, will, I feel confident, prove of rarer occurrence than is imagined. Even were they more frequent than we know them to be, it would be impossible to argue from that circumstance the impropriety of resorting to the copaiba, because the proofs of its efficacy in many cases are placed beyond the reach of doubt; and on trial it will be found that its failures are not more numerous than those of other remedies which are in daily use in the hands of many physicians. Indeed it is impossible to point out any article of the materia medica which succeeds invariably, and is not apt to fail or sometimes to act injuriously under particular circumstances. If therefore, we abandon the use of the copaiba on the strength of its sometimes failing, or of its producing undue irritation, there is no reason why we should continue to employ other articles just as uncertain as it in their effects. Impressed with the correctness of this circumstance, and relying on what I have had occasion to observe myself, as well as on the favourable testimony borne as regards its effects in the various publications cited above, I feel no hesitation in affirming, that whatever may be its want of success in some cases, the copaiba deserves a trial in the disease before us; that in a few weeks, sometimes in a shorter period,—provided the cases be well selected, the symptoms of acute inflammation properly subdued, and the stomach be free from irritation, the pain in the bladder will begin to subside, the flow of urine will become freer, and the desire to void it less frequent, and the quantity of matter will decrease in a very sensible manner. In some instances the copaiba, after producing a marked amelioration of the most urgent symptoms, loses its effect. It often becomes necessary under such circumstances to discontinue it entirely and to resort to other remedies; but in some instances it will be sufficient to suspend its employment during a few days. Indeed from some facts which have presented themselves to my observation, I am inclined to believe that whenever we resort to the copaiba in affections of the mucous lining of the bladder, it is more advantageous to continue it only during a limited period—from a few days to one or two weeks; and to resume its use after a short interval. This plan I have pursued even

in cases in which there was no evidence of diminished virtue in the remedy; the object being to prevent the membrane from becoming habituated to its action, or unduly irritated by it, and also to guard against the inflammation or derangement of the stomach, which it is sometimes apt to occasion.

That those who resort to the *copaiba* in catarrhal affections of the bladder may not be precipitate in abandoning it, when it does not prove promptly effective, we may observe that cases present themselves in which this remedy is very slow in its effects, and that in one or two instances in the practice of a friend, in which the remedy was ultimately successful, several weeks elapsed before any decided amendment was obtained. Had it been discontinued at an early period, it might have been accused of failure; but the issue showed how erroneous such a conclusion would have been, and proved the necessity of giving the remedy a fair trial in all cases. It is not unlikely that some physicians may exclaim that a remedy which is sometimes so tardy in its operation, does not deserve the attention here bestowed upon it, and should make way for others of a more prompt efficacy. This objection, however, need not occupy our attention very seriously, because the cases in which the curative effects of the *copaiba* are slow in being obtained will be found of comparatively rare occurrence, and because it is doubtful whether the other remedies recommended in the same complaint would really act more expeditiously. The disease has always, and with reason too, been regarded as one of a very formidable character, and little under the controul of the most rational plans of treatment and of the most approved remedies, and there is not one of these with which I am acquainted that is not occasionally as slow in its operation as the *copaiba* is found to be in some instances.

The above cases and remarks will, it is hoped, tend to show that the balsam of *copaiba* may, under particular circumstances, be advantageously used in the treatment of catarrhal inflammation of the bladder; that it is not necessary to prescribe it in very large doses; that it may be useful when the diseased parts are yet in a state of well-marked irritation; and that it is not simply useful by putting a stop, by its astringent qualities, to the copious discharge of matter resulting from a relaxed state of the mucous membrane. At the same time, they show that the *copaiba* is not an infallible remedy; that in some cases it fails completely; that in others it is very slow in producing its remedial effects; that in a few instances it may even be injurious; but that if due care be taken in the selection of the proper cases, and if the diseased parts be well prepared for its administra-

tion, and the gastric organs in a proper condition, it will seldom give rise to those effects, and will act both safely and expeditiously.

Irritability of the Bladder.—From what has been stated in the course of the preceding remarks, it may perhaps be inferred, that in the opinion of the writer, the use of the copaiba should be restricted to those cases of diseases of the bladder, in which the mucous membrane is affected with a secretory or suppurative inflammation. Such, indeed, was long the sentiment he entertained on the subject, and to which he was led by the silence of writers in relation to the efficacy of that remedy in cases of a different character; by a consideration of its known astringent and stimulant properties, and by the want of opportunities to test its virtue in other than secretory inflammations. Subsequent experience, has, however, taught him the propriety of changing his former views, for in a few cases presenting evident symptoms of chronic irritation of the mucous membrane of the bladder, but unaccompanied by increased morbid secretion, he has prescribed the copaiba with the most decided success. These results prove, in a most conclusive manner, that the copaiba does not act, in affections of the mucous membranes, simply by arresting a profuse secretion, the effect of an atonic state, but that it operates, in certain diseases of those parts, either by virtue of a specific action, or by revulsion. But whatever be the conclusion to which we may arrive from these facts, respecting the mode of operation of the copaiba, they show that the remedy may be used in a set of cases in which, so far as my information extends, it has not often been employed. Nevertheless, while expressing these sentiments, it is far from my intention to suggest the propriety of resorting to the remedy in question in all cases of chronic irritation of the bladder. My opportunities of using it in that disease have been too limited to justify so indiscriminate a recommendation; and while I am inclined to think, from the trials I have made, that the copaiba will prove serviceable in some instances, I can easily comprehend that it should not be used without great caution.

The following case will, it is believed, justify the praise thus bestowed upon it.

CASE.—Mr. G. aged about forty-five years, and of a nervoso-sanguine temperament, applied to me for professional advice, in the autumn of 1826. He informed me that he had, for a long while prior to the onset of his present malady, enjoyed excellent health,—that, without being able to assign any cause, he had in a very gradual manner become affected with irritability of the bladder; and that this com-

plaint, which proved the source of much inconvenience and considerable uneasiness to him, was characterized by very frequent desire to make water, and by pain whenever he endeavoured to retain it. As Mr. G. was, by the duties of his profession,—that of a teacher of music, under the necessity of remaining, often during an hour or two at a time, in attendance on ladies, and could not in consequence absent himself as frequently and as promptly as might be required to satisfy the calls to make water, he was at times placed in a very embarrassing predicament, and on several occasions was unable to get off with sufficient celerity to escape an unpleasant accident. Owing to these circumstances, and to the frequency of his disturbances at night, he expressed the greatest desire to place himself at once under medical treatment, and regretted his having lost much time in trying a variety of remedies recommended to him by officious friends. He informed me that he had experienced, a few years before, several attacks of gonorrhœa, which, however, appeared to have been entirely cured. He further stated that his genital organs were easily excited, that he was much prone to certain desires, and that he was not backward in gratifying them. With the exception of the vesical irritation above-mentioned, and which was unaccompanied by a discharge of mucus, or by a gravelly deposit in the urine, Mr. G. was free from any disease of importance. He complained only of slight gastric derangement, and on examination the temperature of the surface and the pulse were discovered not to exceed the standard of health.

It appeared evident, from a survey of the symptoms under which Mr. G. laboured, that his disease could not depend merely on the irritating quality of the urine,—a cause assigned by some writers to cases of the kind, because the disease had already lasted some time, and had continued uninfluenced by any of the articles of food or drink made use of, and because the fluid was in general pale, and always limpid. Nor did it seem at all likely, from this condition of the urine, as well as from the absence of pain in the bladder after voiding it, that the complaint depended on gravel or stone. Finally, the power of retaining the fluid, though at the expense of a little suffering, indicated that the symptoms could not be the result of an atonic or debilitated state of the muscular coat, or of the sphincters of the bladder. The only view of the case, then, that appeared to be well founded, was that the disease—for so the complaint under which Mr. G. laboured, and which almost amounted to incontinence of urine, deserved to be called—arose from an irritation of the lining membrane of the bladder, which irritation was aggravated by the presence of the urine, and acting secondarily on the muscular coat elicited its con-

traction in order to effect the expulsion of the offending cause. Under the influence of this opinion, recourse was had to such means as might prove serviceable in removing and in guarding against the occurrence of circumstances capable of keeping up the morbid state in question. The patient was advised to abstain from sexual intercourse, and from all circumstances capable of arousing the excitability of the genital organs. Remedies calculated to restore the functions of the gastrointestinal canal to the healthy point were prescribed, and to these were added, for the purpose of removing the affection of the bladder, moderate antiphlogistic, demulcent, narcotic, and antispasmodic means, both general and local. These remedies were persevered in during a considerable time, but proved of no avail. Recourse was next had to uva ursi, to the tincture of cantharides, to nux vomica, to muriated tincture of iron, &c. under the impression that the disease, after all, might depend on a different cause from that which had at first been assigned. But, instead of having the desired effect, these remedies appeared to aggravate the disease, and my patience, as well as that of Mr. G. was becoming exhausted, when it occurred to me that the balsam of copaiba might perhaps be employed beneficially. To this I was led, not by the result of any previous personal experience with this article in cases of the kind, or by having seen it recommended by other practitioners, but by the recollection of the decided benefit obtained from it in chronic secretory irritation of the mucous membranes generally, and by reflecting that as the remedy probably produces its effects through means of a peculiar action exercised on that tissue, and not merely through its astringent properties, it might display a beneficial effect in the case before me, although the irritation was not accompanied by increased or morbid secretion. In conformity with this view, the copaiba was prescribed in doses of thirty drops, three times a day, and, to the no small satisfaction of the patient, the disease began, in a very short time, to give way. The calls to make water became gradually less frequent, the pain diminished, Mr. G. was soon enabled to retain his urine much longer than he had done for a considerable period before, and in the course of a few weeks he was completely freed from his troublesome and painful complaint. He continued the use of the copaiba, as a precautionary measure, during several weeks longer, and left it off gradually.

Another case similar to the one just described has since fallen under my observation. The copaiba was used in the same manner, and proved equally, and indeed more rapidly, successful. But as the details would occupy more space than can be spared, and

prove of little interest to the reader, I shall abstain from presenting them.

Since writing these pages, my friend, Dr. HAYS, to whom I communicated the above facts, has tried the copaiba in a case of irritability of the bladder, which had resisted the usual remedies, and obtained from it results as satisfactory as those I have recorded.

The balsam of copaiba has been used in other diseases of the urinary organs. BOERHAAVE, (Aph. 1001,) recommends for the cure of abscess of the kidneys, after the urine becomes purulent, simple diuretics in soft and nitrous spa waters, together with the whey of new milk, *balsams*, and the like; and VAN SWIETEN, in commenting on this Aphorism, speaks in terms of commendation of the above practice, and remarks, in relation to the balsams, under which name he includes only the natural ones, the Peruvian, the copaiba, &c. that they have their merits in such ulcerations of the kidneys, if they are given in small doses, three or four times a day, with plenty of diluents drinks. Otherwise, he adds, they are over-heating, and will often cause strangury and inflammation of the urinary passages. At a much more recent period, NYSTEN* stated that the balsam of copaiba is occasionally found useful in cases of nephritic calculi, and we learn from Mr. BRANDE† that he has seen it of service in allaying the irritation and diminishing the secretion of red or uric sand. Mr. HOOPER, in his account of the sick landed from Corunna,‡ states that he employed the copaiba with immediate relief to those patients who complained of a suppression of urine; the disease under which they laboured being the dysentery. The medicine appeared to be of service in relieving the tenesmus, “and a small quantity of urine was evacuated soon after the administration of the second dose.” It is likely that in all those cases the copaiba was serviceable partly from its effects as a diuretic; but in those instances in which Mr. Hooper found it useful, the benefit may in some measure be ascribed to the soothing effects of the remedy on the irritated mucous membrane of the intestines, the inflammation and pain of which probably served to keep the urinary organs in a state of vital orgasm, and thereby prevent the secretion or the discharge of the urine from taking place.

In a communication read before the Philadelphia College of Physicians a few years ago, and which was published in the North American Medical and Surgical Journal, vol. 6, Dr. JOHN RUAN, of this city, related several cases of a distressing disease, the pruritus vulvæ.

* Dict. des Sciences Méd. art. *Copahu*.

† Manual of Pharmacy, p. 17.

‡ Edinburgh Medical and Surgical Journal, vol. 5, p. 400.

30 La Roche on *Copaiba in Catarrh of the Bladder, &c.*

In the first case many remedies were employed. Some of these procured some mitigation to the patient's sufferings, but nothing like a cure was effected until the balsam of copaiba was used. This, in doses of twenty drops, three times a day, acted like a charm. In a second case, a variety of remedies were ineffectually used. The copaiba was at length resorted to, and proved speedily successful. Dr. Ruan tried the same remedy in two other cases, but it failed. When, however, we bear in mind the distressing character of the pruritus vulvæ, and its unmanageableness with the remedies ordinarily employed for its cure, we cannot help being gratified at the results obtained by Dr. Ruan with the copaiba. Two cases out of four do not constitute a trifling proportion, and the success must necessarily encourage us to make further trials with that remedy. I have myself had no experience with it in this disease, or in any of those mentioned above, and have only alluded to the subject for the purpose of completing the survey of the principal affections of the urinary organs in which the copaiba has been found serviceable.

Leucorrhœa.—The introduction of the balsam of copaiba in the treatment of leucorrhœa may be traced to a very remote period in the history of that article, for on consulting the various writers who, in the preceding and present centuries, have entered more or less in detail on its medicinal virtues generally, or spoken of it in reference to its effects in particular complaints, it will be found that it is often represented as a useful remedy in that disease. ETTMULLER, and some other of the older physicians, recommended terebinthinate and balsamic medicines in the treatment of leucorrhœa, and although they do not make special mention of the copaiba, we may presume that they allude to it no less than to the other remedies of the same class. We find also that so early as the year 1710, HOPPE, in a dissertation on the medicinal virtues of the article,* speaks of its use in that disease in a manner calculated to show that in his times it constituted a favourite remedy. LEWIS† enumerates leucorrhœa among the diseases in which the copaiba is principally used, and in which it is *found preferable to the other balsams*. MOTHERBY‡ and LIEUTAUD§ also mention it as a valuable remedy in the same complaint. If we pass to writers of a more recent period, we shall find, that although the remark of Dr. CULLEN, who for a time was considered as high

* See Cullen's *Materia Medica*, vol. 2, p. 134, Barton's edition.

† *Materia Medica*, 4to. p. 132.

‡ *Medical Dict.* p. 200.

§ *Matière Médicale*, 1. 321.

authority in practical medicine, that it is not often prescribed with success, “owing to the stomach not being able to bear a sufficient quantity of it,”* deterred many from resorting to it, yet the number of its advocates has been, since the time of that illustrious professor, nearly as great as it was formerly. It is mentioned with more or less commendation by DEJAEN,† CATTET and LACOMBE,‡ BARBIER,§ ARMSTRONG,|| FABRE,¶ LARREY, of Toulouse,** GOOD,†† MONTEGRE,‡‡ RICHARD,§§ NYSTEN,|||| LOCOCK,¶¶ MERAT and DELENS,*** and by some of these writers it has been frequently used with the happiest results, and recommended as an invaluable medicine in particular stages of the disease in question.

But although the copaiba has long been used and continues to be enumerated among the most useful remedies in the treatment of leucorrhœa, some difference of opinion prevails in relation to the form and stage of the disease to which it is more particularly appropriate. Some practitioners, for example, have resorted to it, and seem disposed to advocate its employment, at an early period; even when there still exists considerable activity in the capillary circulation of the diseased part, as manifested by pain, heat, and the dark colour and viscid nature of the matter discharged. Others, on the contrary, maintain that it should be carefully abstained from under such circumstances, and that it is only useful or safe in recent and simple cases, when there exists from the commencement an atonic state of the parts, or else in the last stages of the inflammatory form, when the increased action in the affected membrane has been completely subdued by antiphlogistics; in a word, when the complaint has passed to the chronic state, and the discharge is kept up by a sort of vitiated habit.

It need hardly be remarked that in this country, where the copaiba is more generally and extensively employed in the treatment of urethral discharges than any where else, the number of physicians who resort to it to combat leucorrhœa—between which and the complaints just named there has generally been supposed to exist considerable

* *Materia Medica*, 1. 134. † *Dict. des Sciences Médicale*, 6. art. *Copahu*.

‡ *Bibliothèque Méd.* 35. p. 202. § *Matière Médicale*, 2. p. 120.

|| *Practical Illustr. of the Scarlet Fever, &c.* p. 359.

¶ *De la Sophistication des Subst. Médicinales*, p. 18.

** *Annales Cliniques de Montpellier*, 26. p. 292.

†† *Study of Medicine*, 5. p. 71, (American edition.)

‡‡ *Traité des Hemorrhoides*, p. 351. §§ *Elémens d'Hist. Nat.* 2. p. 507.

|||| *Dict. des Sciences Méd.* 6. ¶¶ *Cyclopedia of Pract. Med.* 3.

*** *Dict. de Matière Méd.* 2. p. 418.

analogy, is comparatively small. Such being the case, it is not likely we shall discover many among them capable of furnishing from the result of their own experience such information as may enable us to arrive at a decision in respect to the points above-mentioned, and from whose writings any knowledge of a valuable character relative to the use of copaiba in leucorrhœa can be obtained. Influenced, however, by a consideration of the effects obtained from that remedy, not only in gonorrhœal discharges, but in the secretory irritation of the mucous membranes generally, as well as by the opinions expressed and the facts detailed by the writers whose names are recorded above; little satisfied, besides, with the effects produced in some cases by the articles usually resorted to in the treatment of fluor albus, I ventured, notwithstanding the silence of our writers on the subject, to make use of the copaiba in two cases which had resisted the usual plans and the most vaunted remedies. The results were such as to encourage me to make further trials with it myself, and to urge the propriety of doing the same on some of my medical friends. This was accordingly done, and on comparing my own notes and those furnished to me on the cases treated by the copaiba, and on reflecting carefully on the effects obtained, I have no hesitation in recommending it as a useful remedy in the treatment of leucorrhœa, and in expressing the opinion that it is more efficient than some others much more loudly extolled by writers in Europe and this country; that when used in suitable cases, and with proper precautions, it will be found to be a perfectly safe article; and that it possesses an advantage over certain remedies, in greater vogue, of never or very seldom giving rise to strangury and other painful accidents, which render those articles so objectionable to all patients, and to unprejudiced practitioners.

In saying thus much of the efficacy of the copaiba in leucorrhœa, it is not my wish to represent it as capable of being successfully employed in all cases and under all circumstances, or as being superior to all the other remedies usually prescribed in that disease. Cases have presented themselves in which it has been productive of little benefit, or has even failed completely. To claim for it a power over all cases, and beneficial effects in every stage of the disease, would be not only to present an exaggerated estimate of its real efficacy, but also to betray an unpardonable ignorance respecting the diversity of circumstances connected with the production of leucorrhœal discharges, the degree of safety attending their suppression, and the variety of morbid conditions on which they may depend; as well as respecting the known properties of the remedy, and the difference of effects produced under different, and even under analogous circum-

stances in the same complaint, by the same medicinal agents. Every one knows that leucorrhœa is often a symptomatic complaint, the state of the general habit being the cause of it, the *fons et origo mali*. In such cases, the suppression or diminution of the discharge by the copaiba or other means, may doubtless be desirable and advantageous; because independently of the fact, that it is loathsome to the patient, this discharge tends in its turn to keep up that deranged state of the constitution on which it depends. But in all such cases this suppression can only be of secondary importance; the constitutional derangement claiming, of course, the principal share of attention. In another set of cases leucorrhœa depends on, and is symptomatic of an affection of the uterus or of some other organ; and before the discharge can be removed, the disease giving rise to it must be eradicated. Here again the copaiba and other anti-leucorrhœal remedies can only be of secondary advantage; and very many cases will occur in which it cannot be used at all, or will prove far inferior to other means. In a third series the organs which receive the first impression of the copaiba are so implicated as to require our prohibiting altogether the use of the remedy; although the disease itself, might, under different circumstances have been benefited by it. In a fourth set the discharge has assumed the character of an habitual drain, which it would be dangerous to suppress, unless we establish a substitute in some other part of the body, and which, indeed, it is often found impossible to put a stop to by any of the remedies in our possession.

But after making a deduction of the cases of the above description, in all of which, by the way, cantharides and other remedies so pompously recommended would prove just as objectionable as the copaiba, there will remain a number of others, depending on causes of a very different kind, and connected with a different condition of the system at large, or of the gastro-intestinal organs in particular; in a word, which are local in their character; free from complications contraindicating the use of active anti-leucorrhœal remedies, and which it may be possible and desirable to cure. It is in such cases that the balsam of copaiba will, unless I am greatly mistaken, prove often useful. If other means are sometimes found to succeed in cases in which the copaiba has failed, the circumstances must be attributed to a particular idiosyncrasy in the patient, to a peculiar degree and kind of irritability of the gastric mucous membrane, either natural or acquired, by which it is rendered incapable of bearing the contact of that remedy, or to other causes, needless for me to enumerate. But be the cause what it may, it is not possible to discover in those failures a reason for refusing to employ

the copaiba, inasmuch as on trial it will be found that the cases in which it proves inefficacious are of rare occurrence; and because, as every physician must know, a similar objection might, with equal justice, be urged against every article of the *materia medica*.

The nature of the action exercised by the copaiba on the living tissues, and its mode of operation in disease would seem to indicate, *à priori*, the necessity of deferring the employment of that remedy, in leucorrhœa, until the inflammatory symptoms—heat, pain, febrile excitement, and dark colour of the matter discharged,—had been, to a certain degree, subdued by antiphlogistics and emollients. Now, experience will, I feel confident, be found fully to justify the supposition; and no one who has used the copaiba to some extent in the disease in question, and marked its effects, will refuse to join in the sentiment that the practitioner, whenever he wishes to derive benefit from it, must carefully conform to the plan suggested. On this point it is necessary to be very explicit; because there are some physicians who, while admitting the inflammatory nature of leucorrhœa, disregard the necessity of depletion; and who, viewing the copaiba in the light of a specific, might feel disposed to use it in all the stages of the disease. Again, on the other hand, there are not wanting works, of some authority too, in which leucorrhœa is represented as being, in every case, and under all circumstances,—whatever symptoms present themselves, a disease of debility, depending on a relaxed or atonic state of the parts and of the system at large, and calling from the commencement, for the use of tonics and stimulants, among which are properly placed the balsamics. It need hardly be remarked to those who entertain different views of the nature of the disease, as well as of the remedies required for its cure, and of their mode of operation, that the opinions alluded to are calculated to lead to an erroneous and dangerous practice. They will immediately perceive the propriety of insisting on the necessity of pursuing the course I have recommended,—of resorting to antiphlogistics in the early stages, whenever the inflammatory symptoms run high, and abstaining from copaiba until these have been greatly moderated—and thereby preventing, if possible, others from adopting the mode of practice advocated by the physicians and in the works adverted to. It is necessary to add, that, in order that the copaiba may be used with effect and safety, in leucorrhœa and other complaints of the mucous membranes, all symptoms of gastric inflammation or irritation should have subsided.

But while thus dwelling on the necessity of subduing, by proper remedies, symptoms of undue irritation previously to administering

the copaiba, I am far from admitting the propriety of limiting its use, as LAGNEAU, PINEL, BRICHETEAU have recommended, to those cases in which there really exists an atony of the diseased organs, and to the very last stage of the complaint, when nothing seems requisite to be done but to give tone to the parts and to arrest the discharge. This would be going to another extreme, which may with propriety be regarded just as unfounded as the one already noticed. So far, indeed, from pointing out the necessity of restricting so greatly the use of the copaiba, experience teaches that it may be usefully employed in cases in which, though the inflammation has been considerably moderated by antiphlogistics and soothing applications, the parts are not only in a state different from atony, but present phenomena characteristic of a notable degree of irritation. That such is the state of the diseased tissue in many cases in which the copaiba is usefully employed, we have a proof in the circumstance, that with few exceptions, other stimulants are generally not only useless but detrimental.

But enough has already been said on this subject, and after remarking, that the fact of copaiba being useful under the circumstances mentioned, shows that the object to be obtained is not simply to astringe and strengthen an atonic tissue, but to produce an action capable of modifying and thereby removing the morbid one on which the disease depends, I proceed to present the details of a few cases which, it is believed, will serve to confirm the views I have thus advocated.

CASE I.—A married coloured woman, about thirty years of age, and of a lymphatic temperament, consulted me a few years ago for well-marked leucorrhœa. The disease was of two months standing, and proved a source of great inconvenience to her on account of the profuseness of the vaginal discharge, of the sensation of heat, and of the pain she experienced in the parts, particularly during coition. The matter was thick and of a dark colour; the skin was rather warmer and drier than in the natural state; the pulse quick and tense; and the tongue red on the edges, and furred in the centre. There was little or no appetite for food, and the bowels were constipated. On examination per vaginam, the parts were found to be tender, but the uterus exhibited no signs of disease. The patient informed me that she had menstruated at the regular period, two weeks before, but that on that occasion, as well indeed as ever since the appearance of the leucorrhœal complaint, the quantity of blood discharged was much smaller than it was in ordinary times. It may be added, that her health was naturally delicate; that she had some years before

laboured under a protracted attack of the same disease; that she had taken a vast quantity of medicine for its cure, and finally, that her habits of life were correct and temperate.

In order to subdue the vaginal irritation and the gastro-intestinal derangement, bleeding from the arm, emollient drinks and lavements, vaginal injections of the same nature, tepid baths, low vegetable diet, and complete abstinence from sexual intercourse, were recommended. In less than a week the woman again called to see me. Finding now that the gastro-enteritic irritation had greatly abated, and that the other symptoms were somewhat mitigated, mild purgatives were ordered, and the patient was advised to continue the use of the above-mentioned means—venesection excepted. At the next visit the pulse was found to have lost its tenseness; the tongue presented a more natural appearance; the appetite had improved; the heat and pain in the vagina had lessened, and the matter discharged, though still abundant, had lost to a certain degree its viscosity and dark colour.

Regarding this as a suitable case for the exhibition of the copaiba, twenty-five drops of the medicine were prescribed three times a day in a wine glassful of milk. The patient was desired to continue, if possible, the use of the copaiba during two weeks without intermission, and to call on me at the expiration of that time. This was faithfully complied with, and when next I saw her, she informed me that the remedy did not in the least disagree with her stomach, that since she commenced using it the leucorrhœal discharge had greatly decreased, and that in every respect her health was much improved. The copaiba was ordered to be continued in increased doses, and in a short time the woman called on me, and reported herself perfectly restored and free from her troublesome complaint.

It may be remarked, that in this case no astringent, tonic, or stimulant, no anti-leucorrhœal remedy, except the copaiba, was prescribed, and that the latter was resorted to, although the parts were far from being in a state of atony. From these circumstances, and owing to the fact, that a cure could not have been effected by the means at first prescribed—antiphlogistics and emollients, it must follow, that the entire credit should be awarded to the copaiba, and that those who would limit the use of this remedy to atonic cases, have but a very imperfect idea of its efficacy and mode of operation. The attack just described, though, as appeared from the information communicated by the patient, more formidable than the one under which she had laboured formerly, was cured much more expeditiously; from which we may conclude, that the copaiba is, at least

sometimes superior to other anti-leucorrhœal remedies. Whether this woman has continued free from the disease since that period, I am unable to say, as I have completely lost sight of her.

CASE II.—Madame B. aged about forty years, of a nervoso-sanguine temperament, and usually enjoying good health, experienced about the year 1826 domestic troubles, which brought on a state of melancholy. The catamenial functions were deranged, both in respect to the quantity of blood discharged, and to the regularity of the periods. The digestive functions became in a short time implicated, to such a degree indeed, that the gastric derangement assumed at length the characters of well-marked dyspepsia. A short time after the commencement of her disease, Mrs. B. was attacked with acute pain in the region of the bladder attended with frequent desire to make water, and with copious leucorrhœal discharge.

Such was the state of Mrs. B. when I began my attendance. As may readily be presumed, the first remedial measures resorted to were such as appeared best calculated to relieve her from the pain she suffered, and to restore her digestive and urinary organs to their normal condition. Leeches, rest, hip-baths, emollient vaginal injections, fomentations, opiates, a suitable diet, were successively prescribed. By these means the irritation of the bladder was soon relieved, but the dyspeptic symptoms which evidently depended more on gastralgia than gastritis, continued unabated. With a view to remove them, a variety of remedies ordinarily used in such cases were administered, but without success. The prussic acid was now prescribed in small doses, and proved so highly and promptly efficacious, that in a short time the gastric derangement disappeared completely. This desirable object having been attained, an opportunity was afforded for administering such remedies as appeared required to put a stop to the leucorrhœal discharge, which had been little, if at all, influenced by the treatment heretofore pursued, and was accompanied with heat and pain in the vagina.

After continuing the use of emollients a few days longer, I ventured, not without hesitation however, on a few drops of copaiba, and directed that the remedy should be taken in a small quantity of milk, and on a full stomach. But as this organ, though free from positive disease, was preternaturally irritable, some difficulty was at first experienced in causing the copaiba to sit well upon it. Pain, nausea, and occasional vomiting, were the consequence of its use, and necessitated the suspension of it. At length this condition of the stomach being relieved by proper means, another trial of the copaiba was determined upon, which proved more successful than the first,

the remedy agreeing better than it had done before, and producing none of the effects mentioned above, with the exception of a little nausea. The dose was in consequence gradually increased to twenty-five drops three times a day. For fear however of its once more occasioning, if persevered in constantly, undue irritation of the stomach, it was discontinued for one day at a time, twice a week, and the patient was directed to make use, on those days, of emollient drinks, and small doses of prussic acid. By attending to these precautionary measures, Mrs. B. was enabled to continue the use of the copaiba in the quantity stated during a month, at the expiration of which she was almost entirely relieved of her leucorrhœal complaint. The medicine was, in consequence, gradually discontinued; and slightly astringent vaginal injections and washes were made use of. In a short time the menses returned; her mental depression disappeared, with the domestic troubles which had given rise to it; the digestive functions were restored, and Mrs. B.'s health became completely reëstablished.

The case I have just described affords an example of a very serious derangement of health occasioned by mental depression, as well as of the beneficial effects of the prussic acid in gastralgia. But what is more to our present purposes, it exhibits the advantages that may be derived from the administration, with suitable precautions, of the balsam of copaiba in leucorrhœa. It may perhaps be objected, that the cure was protracted beyond the usual limits, and that this circumstance detracts somewhat from the credit I have awarded to the copaiba. But if we bear in mind the complicated nature of the disease in this instance, and the difficulty usually experienced in putting a stop to fluor albus—whatever be the remedy employed, the objection must be found to lose much of its force. For my part, I think it probable that in the instance before us, no other article would have proved more rapidly serviceable; and certain it is, that in consequence of the impaired state of the stomach, and the irritation which had existed at the neck of the bladder, several of the more popular remedies for leucorrhœa would have been completely inadmissible. It is also probable, that if the copaiba had been prescribed before the removal of the gastralgia, it would have acted very injuriously, or at least sufficiently so to necessitate its being laid aside altogether, for its action, as has been stated, is of a stimulating nature, and it cannot, on this account, be regarded as free from detrimental effects so long as the stomach remains in a state of morbid excitement. The truth of this remark will be rendered evident by the details of the following case.

CASE III.—In October, 1825, I was requested to attend Mrs. B. a native of New Orleans, who was labouring under an attack of measles. This lady was about twenty years of age; had been two years married; had not borne children, and was generally regular in her catamenial functions. Her husband informed me, that she had been affected with leucorrhœa during the last eighteen months—that this disease had come on in a gradual manner, and had been treated unsuccessfully by means of cold bath, Peruvian bark, and other remedies of the same kind.

Having been consulted by Mrs. B. solely for the exanthematic disease, my attention was directed exclusively to this complaint, from which my patient recovered in the usual period without having experienced any untoward accident, except a copious uterine hæmorrhage which supervened on the fourth day of my attendance: I afterwards lost sight of Mrs. B. for more than a year. At the expiration of this period, her husband called on me, and stated, that on the recommendation of some officious friend, his wife had consulted an elderly German physician, then a resident of this city, concerning her leucorrhœal complaint; that this physician had at first prescribed the Peruvian bark, both by the mouth and in the form of vaginal injections; that not succeeding with these, he had had recourse, in succession, to an immense number of stimulating and astringent articles; that wearied, at length, at the continual changes of nauseous drugs, none of which had produced the desired effect, she had dismissed him, and had consented to apply to me. I further learned, that the patient discharged a very large quantity of matter from the vagina; that she experienced much heat and some pain in the part, and that these symptoms were much aggravated during, and for some time after coition; that during her menses, which, in general continued to appear in a pretty regular manner, the vaginal discharge evidently lessened in quantity; and that the patient had lost a good deal of flesh. Her skin was pale, and of an earthy colour, and generally became rather warmer than natural towards night; her appetite was tolerably good, but the digestive process was slow, and attended with sensations of fulness and uneasiness in the stomach and bowels; she was generally thirsty, and finally, her bowels were very constipated.

From this enumeration of symptoms, I was led to the conclusion that the disease, for which advice was demanded, depended on a high grade of secretory irritation of the vaginal mucous membrane; that this irritation extended probably as high as the neck or mouth of the uterus, and that the internal lining of the digestive tube and the biliary organs were affected in a secondary manner. For the

purpose of removing this morbid state, bleeding from the arm or by leeches appeared to be called for, and were ordered; but owing to the fears and prejudices of the patient it was found impossible to draw blood in any way. It became necessary, in consequence, to have recourse to more slow and less efficient means, such as a low vegetable diet, acidulated and emollient drinks, saline purgatives, rest in a horizontal position, emollient vaginal injections, and tepid baths. At the expiration of ten days I was informed that the leucorrhœal irritation, as well as the gastric derangement, had in some measure diminished, but that the discharge continued as before. The balsam of copaiba was now prescribed in moderate doses, and after a little persuasion Mrs. B. consented to take it in cold chamomile tea. By this means the quantity of matter discharged decreased somewhat in less than a week; but as the copaiba occasioned considerable distress in the stomach, pain in the bowels, and thirst, it was laid aside for two or three days. It may be proper to remark that during the continuance of the gastro-intestinal irritation produced by the copaiba, Mrs. B. became affected with a depression of spirits, amounting almost to melancholy, and alternating with agitation and hysterical symptoms. At the end of the above-mentioned period, I was informed that the whole of these symptoms had subsided; but that the leucorrhœal discharge was again on the increase. The patient was, in consequence, once more placed under the use of the copaiba; but after a few days, owing to a recurrence of the same symptoms, it was again discontinued. It was easy to find, from what was stated by Mrs. B. and her attendants, that although she could not continue the use of the copaiba more than four or five days in succession, and it required two or three days more before the irritation occasioned by it had completely subsided, we were gaining ground on the disease. The plan was on this account persevered in during a few weeks; the vaginal irritation gradually decreased; slightly astringent and tonic injections per vaginam were had recourse to; a more substantial and nourishing diet was allowed, and at the period of my departure for Europe, a few weeks after, Mrs. B. was so greatly restored as to entertain the prospect of a speedy and complete relief from the distressing disease under which she had so long laboured, and for the cure of which a great variety of anti-leucorrhœal remedies had been tried in vain.

There can be no doubt, that in this case, the copaiba, although causing so much irritation of the gastric organs, as to force me to several times suspend it during a few days, evinced considerable power over the leucorrhœal discharge. This we may infer from the

fact, that by its means a disease of already long standing, and which had baffled the efforts of art, and it may be added of empiricism, was, if not completely removed, at least greatly relieved. The patient herself was fully aware of its utility; and nothing, probably, could have induced her to resume so often the use of a remedy of a highly nauseous taste, and producing the unpleasant effects stated, except the conviction that it was producing the desired effects. As regards myself, I frankly admit, that it was only the courage and the wishes of Mrs. B. which induced me to persevere with the copaiba; and that on two or three occasions I suggested the propriety of substituting some other remedy of a less irritating nature.

The second case of leucorrhœa described above, presents an instance of gastric irritation brought on by mental depression. In the third we have an example of the reverse—a state of mental depression, as well as hysterical derangement, produced by a gastric affection arising evidently from the action of a stimulating remedy on a preternaturally irritable mucous tissue.

In the next number of this Journal I hope to be able to offer some observations on the effects of the balsam of copaiba in diseases of the alimentary canal.

ART. II. *Cases of the Epidemic Yellow Fever prevalent at New Orleans in the Summer and Fall of 1833.* By E. B. HARRIS, M. D.
[Communicated to Dr. SAMUEL JACKSON, of Philadelphia.]

THE following is the history of twenty cases of the late epidemic fever prevailing at New Orleans. The number Dr. HARRIS writes could have been increased to eighty, with an additional mortality of two deaths.

The treatment pursued in these cases was based on physiological medicine. They furnish an evidence of its applicability to the diseases of the southern regions of our country: of this fact no rational doubt could be entertained, but many who do not understand its *principles*, and do not wish to recommence and continuously prosecute their medical studies, have made this assertion. It may be suspected, this is often done as an apology for indolence, and a justification of an adherence to established routine, rather than from conviction, the result of deliberate examination.

It may be well to say a word in explanation of what is intended

by physiological medicine, as it is grossly misunderstood, or quite as badly misrepresented, by individuals whose position should be a guarantee against either error.

In physiological medicine the pathology of disease is established on the structure of the organs, their vital actions and functions. Disease is a modification in the normal vital condition of structure, (which includes both the solid and fluid elements,) whence proceed change or disorder and disturbance of function and structure as effects. Therapeutics is the appreciation of the modifications caused by medicinal agents in the vital condition of structure; and treatment or practice consists in the adaptation of the therapeutic modification, or vital reaction caused by remedial agents, to the pathological modification or vital reaction of the organs proceeding from morbid causes.

Such are the fundamental principles of physiological medicine. It is rational as opposed to routine medicine. It is opposed to and admits of no quackery, as it requires a profound knowledge of the animal organism, of vital phenomena, and the positive actions of remedial means. This knowledge too is to be governed by the processes of reasoning as applied to each particular case.

Physiological medicine, either designedly or ignorantly, is confounded with the *physiological doctrine* of BROUSSAIS. The medical doctrine of this distinguished physician, which is the physiology of irritation, is eminently physiological. It is the only general system of medicine promulgated in France which took physiology for its groundwork. It was, therefore, no presumption in Broussais to name it as he did—the physiological doctrine. The term would have been less applicable in Britain and this country, than in France. BROWN, DARWIN and RUSH, had promulgated doctrines founded exclusively on physiology. The failures of these truly eminent medical philosophers, are to be ascribed solely to the defective state of the physiology of their time. With the paucity of their materials, and the imperfectness of the science, it was not possible for them to erect a durable fabric. The principles of Miller and of Rush, adapted to the physiology of the present time, would approach very nearly the doctrine of Broussais.

The doctrine of Broussais is an advance in the theory of medicine. It has fixed more entirely the ideas of irritation, before exceedingly loose, and given a clearer exposition of the numerous phenomena depending on that vital condition, than any other that had preceded it. It is to Broussais we are indebted for a more perfect knowledge of the chronic irritative and inflammatory diseases, which had been by

the great mass of practitioners wholly misunderstood; and to this knowledge is to be ascribed the present more successful methods of treatment adopted in those affections. The improvements of Broussais in these respects are incorporated in the body of the science, and it is almost forgotten whence they proceeded. In the reâction also, induced by the arrogancy, dictatorial spirit, and offensive manners of the man, are overlooked, in a great measure at the present period, the services rendered by the philosopher and physician. Time, the victor of prejudices, and the calmer of passions, will do justice in this respect.

The doctrine of Broussais will not be more permanent than its antecedents. Its base is too narrow. It is but a stepping-stone in the progress of theory. No general theory of medicine, for a long period to come, can be perfect or lasting. The facts of vitality and organization are too little developed, and too little understood, to admit of an entire theory that will be found unexceptionable. The most that can be done, or that can be expected, is the temporary generalization of the facts as *they are now understood* to render their application to practical purposes more prompt and systematic.

Physiological medicine, or the arrangement and application to practice of the physiological and structural organic phenomena, as they become verified, has this advantage over a mere doctrine. It is not tied down to a fixed set of what are considered positive facts, but which are likely to be disproved as such in the rapid advance of our positive knowledge. Its character is expansive and adapting, repelling nothing that bears the impress of demonstration, and retaining nothing proved to be untrue. As it is the philosophy of organic phenomena applied to the purposes of medical science, every verified fact that comes within its scope, or bears upon its principles, must find its appropriate position and its useful application.

The strict pathology of yellow fever cannot be considered as positively settled. Some of its important facts are determined—others remain obscure. That an intense gastro-duodenitis is its most prominent character—that the primitive symptoms proceed from this source, may be regarded as nearly unquestioned. The dissections of Dr. PHYSICK in this city first attracted attention to this fact, which has since been confirmed by repeated observations. Dr. RUSH made the stomach “the seat and throne of the disease.” EDWARD MILLER of New York, one of the ablest and most philosophical medical practitioners of this country, assigned the stomach as the source—*fons et origo*—not only of yellow fever, but of all fevers of malignant character.

While this general fact is indisputable, and the leading features of the disease announce in unequivocal language the existence of an intense gastro-intestinal inflammation, there prevails, however, a constant disposition to hæmorrhage, or at least to the escape of the colouring matter of the blood from the inflamed gastro-intestinal mucous membrane. This may be regarded as the specific character of the disease. I have never witnessed a fatal case of yellow fever in which this was absent. Even when no black vomit is ejected during life, it is always found in the stomach on dissection. From the number of autopsies I have assisted at or performed in this disease, I regard this as one of the most positive facts of the disease. In very violent cases the same hæmorrhagic disposition is manifested in other points, as the mouth, the ears, the carunculæ, the bladder.

This symptom is present only in the fatal cases—at least I have never known a recovery when it has existed. There are traditions of some few cases in the epidemics anterior to my personal observations, which commenced in 1805, in which recovery had taken place after black vomit and bloody discharges. They are exceedingly rare.

What is the immediate cause of this hæmorrhagic disposition is unknown. It may reside in the blood itself. But it appears to be regulated by the intensity of the local inflammations. The treatment of the disease should then be directed entirely to the restraining of this last condition. If that be confined below a certain grade, the fatal complication is prevented. The recuperative powers of the organism are preserved, and will prove adequate to the safety of the patient. The physician can accomplish, and should attempt no more. The case is precisely analogous to that of the exanthematous fevers derived from specific contagions, and possessing a specific character. No one attempts to cure the disease. Their danger arises from the intensity of the *local inflammations* that invariably attend them, disturbing the functions of important organs, and disordering the whole constitution of the individual. The protection afforded against these inflammations by a treatment that limits their too great activity, is the extent of our remedial proceedings. No remedies are possessed of specific powers adapted to the specific character of the disease capable of arresting its progress. By mitigating the intensity of local inflammations, fatal complications are prevented, and then the patient recovers. When the too great virulence of the contagious poison or the state of the constitution, or organs of the patient, is such as to occasion inflammations of an activity beyond the reach of our curative operations, disorganization and the destruction of functions essential to vital activity then ensue, and the patient perishes.

In the following cases, reported by Dr. Harris, this course was followed. Neglecting the specific character of the disease, of which we have no positive information, and for which still less do we possess any positive remedy, the whole treatment consisted in the employment of means the most directly calculated to diminish the local inflammation in the organs where they are the most actively developed. The plan is rational, and the success was gratifying. By keeping down the too great intensity of the gastro-intestinal inflammation, the secondary symptoms and the hæmorrhagic disposition were controlled, and the cases remained within the ordinary curative powers of the economy.

Dr. Harris was a resident physician of the Alms-house Infirmary of this city, and he there witnessed the application of the method he has pursued in the treatment of fever. This method is simple. It consists in combating in its acute state, the gastro-intestinal inflammation, and the secondary train of symptoms it excites in the nervous organs, by the most powerful, yet simple and direct of the sedative and antiphlogistic means we possess. These are general bleeding, to limit the too great activity of the general circulation. Capillary depletion to attack immediately the local or capillary affection. Cold, the only true sedative and positive febrifuge, to concur in the same object, and to allay the excitement of fever. Revulsion, accomplished by warmth to the extremities and cold to the head, equalizing the excitement, and preventing cerebral congestions, and epispastics or sinapisms, when the violence of reaction has been subdued. Finally, the employment of the milder purgatives calculated to call forth the intestinal secretions, when the inflammatory condition has been properly combated, terminating its last remains, or carrying off a congestion that may have been formed. Mercurials administered at this period, and in some cases carried to the point of light ptyalism, often are the most effectual for this last object.

The most important of these remedies in the commencing stages, the most *efficient* of all remedies in the acuity of fevers, (to employ an old phrase,) are local depletion and cold. This last is to be employed in ablutions, or persistently to the head and to the abdomen when their temperature is elevated; cold affusions to the head, and injections into the bowels. I know of no remedy that so truly merits the appellation of febrifuge as this last. Its effects in controlling, subduing, and calming a febrile paroxysm are often wonderful. When the temperature is sufficiently low, which must be regulated by the intensity of the febrile heat, it is more prompt and powerful than the most copious blood-letting, while no danger is incurred of producing ex-

haustion should the disease progress, often fatal when too copious evacuations have been practised.

The experience of Dr. Harris of this method of treatment, in the fevers of the southern states, has been sustained by that of Dr. EDWARD BARTON, formerly of Louisiana, but at present of New Orleans. Dr. Barton has published the result of his observations in this Journal, Vol. XI, p. 43, et seq. S. J.]

CASE I.—Mr. M.C. æt. 28, sanguine-lymphatic temperament, first summer in New Orleans, was seized, August 20th, 1833, about 6 P. M. with chill, pain in stomach and head and lower part of spine, general uneasiness in his bones. I was called at 7 P. M. and found pulse 140 and full, skin hot, pain in epigastrium, vomits mucus mixed with grumous blood, great stupor, bowels constipated, tongue beginning to be furred and red at edges. Ol. ricin. ℥iss.; injection of ol. ricin. ℥ij., molasses, ℥ss., and mucilage, ℥viii. mixed well. The injection to be repeated every hour until the intestines are fully evacuated. Fifty leeches to epigastrium; cold affusion to head; iced barley water for drink, and diet. 10 P. M. The leeches have drawn well; sickness of stomach calmed; head-ache diminished; pulse reduced to 120, and not so full; skin slightly disposed to moisture; bowels freely acted on. Ordered a warm bath, with cold affusion to head while in bathing tub.

21st, 6 A. M. Still complains of his head; stomach tranquil; tongue furred in middle and red at centre; pulse 110; bowels freely acted on during the night; desire for his iced drinks, as cold water and barley water, which were given often, but in small quantity at a time. Ordered eight leeches behind each ear, warm bath with cold affusion repeated, and injection as before. 12 M. Head felt much relieved after the leeches were applied; urinates freely, deep red; pulse 100; skin perspirable; tongue in same condition; head feels but slightly heavy. Continue treatment. 8 P. M. Head still feels heavy; bowels have been opened several times in the day; condition otherwise unchanged. Ordered eight leeches to inside of thighs; cold mucilage injection; at 10 P. M. the bath, and affusion to head.

22d, 6 A. M. Slept several hours last night; feels no pain or uneasiness; redness of tongue at edges much lessened; desire for cold drinks decreased; pulse 90; skin perspirable; a little nausea; urine becoming almost natural. Soda pulv. with tart. acid in effervescence occasionally. 8 P. M. Saw him several times during the day; the soda powders relieved the nausea of which he complained; pulse 85, and good; tongue improved in appearance. Mass. ex

hydrarg. grs. v.; arrow root in addition to his barley water; injection of mucilage.

23d, 6 A. M. Slept well; bowels free; convalescing; pulse 80. Continue regime.

24th, 6 A. M. Continues to improve; stools present a dark aspect. Continue arrow root and barley water.

25th. Condition unchanged; allowed chicken water.

26th. Doing well. Allowed chicken soup.

27th. Discharged, with restrictions as to his diet. On 28th he is up in his room.

CASE II.—Mr. Wells, æt. 30, sanguine-lymphatic temperament, first summer in the city, was taken at 8 A. M. August 22d, 1833, with chill, pain in lower part of back and bones. At 10 A. M. I was called, and found him in the following condition:—Greatly frightened, and crying; pulse 130, and full; bowels constipated; heat, and soreness of epigastrium on pressure; skin of abdomen hot; headache. Ol. ricin. \mathfrak{z} iss.; fifty leeches to epigastrium; injection of ol. ricin. \mathfrak{z} ij.; molasses, \mathfrak{z} ss.; mucilage, \mathfrak{z} vij. mixed together; the injection to be repeated every two hours, until there are free evacuations. Cold barley water for diet and drink; cold affusion to head. 3 P. M. Pulse reduced to 110; leeches drew well; pain in stomach but slight; head-ache diminished; skin hot; tongue becoming furred and red; urine of a deep red, and depositing a lateritious sediment; bowels freely opened. Ordered eight leeches behind each ear; repeat injection; tepid bath, with cold affusion to head; iced barley water. 8 P. M. Head-ache lessened after the application of the leeches; bowels freely evacuated; abdomen much diminished; mind less agitated; condition otherwise unchanged. Ordered cold mucilage injection; bath, with cold affusion to head at 10 P. M.; continue cold drinks.

23d, 6½ A. M. Slept two or three hours last night; mind much relieved; tongue furred and red at edges; pulse 95; dullness of head but slight; forehead a little disposed to moisture; slight nausea; bowels open. Ordered a warm pediluvium, and pulv. sod. and tart. acid in effervescence. 8 P. M. Has passed a tolerable comfortable day; several evacuations from intestines; no uneasiness in head; tongue not so red at edges; pulse 85; urine high-coloured, (red;) nausea relieved; thirst not very urgent. Cool flaxseed injection; continue drinks.

24th, 6½ A. M. Rested well last night; pulse 75; bowels open; urine less deep in colour, and sediment not so abundant; tongue not so red at edges, but furred, of a blackish colour in the middle; does

not complain. Thin arrow root by sips every hour or two, in addition to barley water. 8 *P. M.* Saw him during the day; no change. A warm pediluvium; mass. hydr. grs. v. at 10 o'clock.

25th, 6½, *A. M.* Has slept several hours during the night, but as he has charge of an extensive concern, and all absent but himself, his mind is either much affected thereby, or by some other cause; he is now shedding tears; otherwise condition unchanged; tongue cleaning off. Mucilage injection. Continue treatment. 8 *P. M.* I find now his condition much changed, and on inquiry ascertain that his friends have been continually coming in and talking to him during the day. His tongue is red and fiery; pulse 110, quick and weak; skin hot; partial insensibility. Tepid bath; continue barley water.

26th. Condition aggravated; prostrated; tongue red and chipped; mind so much disturbed as to be delirious; partial insensibility. Arrow root, (thin,) and barley water, with a continuance of injections of mucilage.

In the above condition, but more prostrate, he remained until the 29th, when his pulse became a thread, and I ventured, in opposition to my judgment, and a fear that he would sink during the night, an injection of carb. ammon. in mucilage, every three or four hours. They were continued until next evening, when, no change for the better being perceived, they were discontinued. He was now put in a tepid bath, and confined to arrow root, barley and iced water. About the 5th of September his dryness of tongue and body began to disappear, and on the 7th all diseased appearances were absent. He was now almost a perfect skeleton. Allowed chicken soup. On the 12th he is enabled to walk with assistance. Discharged, with cautions as to regimen.

CASE III.—Mr. S. W. æt. 20, sanguine temperament, has been in New Orleans several winters, but went north every summer; a native of Philadelphia; was seized on Monday afternoon, August 26th, 1833, with a slight chill and pain in the head and lower part of the back, succeeded by slight fever. I saw him about 7 *P. M.* three hours after attack. His pulse was 110, and he complained as above but slightly; his bowels were constipated; slight sickness of stomach. Ol. ricini, ℥j. to be succeeded by injections of ol. ricini, ℥ij. with molasses, ℥ss. and flaxseed mucilage, ℥viij. The injection to be repeated every two hours until the bowels are fully acted on. Twenty leeches to epigastrium; cold affusion to head; cold barley water for diet and drink.

27th 7, *A. M.* Head-ache and nausea much relieved; pulse 100; skin but little excited; bowels freely evacuated; tongue slightly

furred and red at edges; urine of a deeper red than natural; pressing on stomach does increase its uneasiness; has an anxiety and dullness of expression I do not like, and is drowsy, although he slept much last night. Ordered injection repeated; tepid bath, with cold affusion to head; continue barley water. 8 *P. M.* Saw him several times in the day, but without any alteration in observation or directions. Bowels freely opened; does not complain of any pain, except uneasiness in the head. There is, notwithstanding, an unnatural fulness of the abdomen for one who has been so copiously evacuated; tongue but little furred or red at edges; pulse 90. Repeat injection; tepid bath, with cold affusion; eight leeches to epigastrium.

28th, 7 *A. M.* Still continues to be much disposed to sleep; pulse 85; urine now red, and depositing a lateritious sediment; does not complain of pressure made on epigastrium; bowels several times opened in the night, by the injection; skin cool and pleasant; appearance of fulness in the bowels still continues; tongue cleaning. Injection of cool flaxseed mucilage, to be repeated at 12 *M.*; mass. ex hydrarg. grs. v. mane et midi. 8 *P. M.* Saw him several times in the day; does not complain; no difference in observation from last notice, except an increase in thirst. Tepid bath; repeat injection; ice to be allowed to dissolve in the mouth; continue barley water.

29th, 7 *A. M.* Every organ except the brain seems now to be unembarrassed and performing well its duty; there is continuance of a disposition to drowsiness and listlessness; bowels open, and discharges yellowish; urine approaching to natural; tongue but little furred, and no redness at edges; very slight nausea; pulse 80. Sodæ carb. with tart. acid, in effervescence, to be repeated occasionally if nausea continues; repeat injection of flaxseed mucilage; warm bath, with cold affusion to head. 8 *P. M.* Does not complain; drowsiness much diminished; is tranquil; pulse 80, and good; skin on forehead moist; bowels open and yellow. Thin arrow root, by tea-spoonful at a time, every hour or two; sponge body, when not moist, with whiskey in the night; a warm pediluvium, with mustard.

30th, 7 *A. M.* A little restless in the night; all appearances good, except a fulness of abdomen to the touch; desires to eat. Continue treatment.

31st, 6½ *A. M.* Saw him several times yesterday, but without any change from last observation; still desires to eat. Allowed weak black tea; continue arrow root. 10 *A. M.* While passing, called in by accident to see him, and, to my surprise, found a change in his visage; lips slightly purpled; listlessness. Inquired, and ascertained that he had heard of

the death of an intimate friend in the house, who died that morning, in the next room to him. Has not urinated since morning. Epispas. to epigastrium; flaxseed mucilage and spts. nitri. dulc. for an injection; continue barley water. At 12 M. he sent to me, and stated he had hiccups, and wanted to know what would relieve him, as they were, to use his own words, "troublesome." I repaired to him immediately, and found his lips and visage still more changed to purple; hiccoughs, which are convulsing. I stated his situation to his brother, who was unaware of the change. Dr. T. HUNT saw him with me at 3 P. M. Passes no urine yet; no delirium, but entire listlessness. Injection of mucilage and spts. nit. repeated; pediluvium with nitro-muriatic acid, $\mathfrak{z}\text{j}$.; epispastics to ankles. At 8 P. M. we saw him again; his condition was unchanged. I was now sent for twenty miles below the city, to see my friend Dr. RUSHTON, who, on a visit the evening before to a friend, was severely seized himself. My friend Dr. Hunt had the kindness to attend my patients in my absence, and from him I learned, that this patient continued to grow worse, with complete relaxation of the sphincter ani, until the next evening, when he expired. An épispastic was put on the spine in addition to the above treatment. An opportunity for post mortem examination was not offered.

CASE IV.—Mr. L. C. æt. 31, a merchant, (first summer residence in the city, although he has resided here since 1829 during winter, spring, and in summer until about 1st August,) sanguine temperament, after a great deal of fatigue in sitting up with sick friends, was affected, August 27th, with slight head-ache, and pain in lower part of back, and uneasiness in bones. Saw him an hour after attack, at 8 P. M. when he presented the following symptoms:—Pulse 100; tongue, on projection, tremulous; uneasiness on pressing epigastrium; skin of abdomen slightly hot; bowels constipated; a little head-ache; pain in his lumbar region, and general uneasiness, as stated; thirst. Fifteen leeches to epigastrium; ol. ricini, $\mathfrak{z}\text{iss}$. to be followed in two hours by an injection of ol. ricini, molasses, and flaxseed mucilage; the injection to be repeated every hour until the bowels are freely evacuated. Cold barley water.

28th, 6 $\frac{1}{4}$ A. M. Leeches drew well; pulse 90; bowels freely acted on; pain of epigastrium and back much relieved; tongue furred and slightly red at edges; dull sensation in head; urine high-coloured, and depositing a lateritious sediment; slept several hours last night; temperature of skin decreased. Six leeches behind each ear; a warm bath, with cold affusion to head; repeat injection; continue barley water. 8 P. M. Saw him several times in the day. Doing well; pulse

now 85; does not complain; had several stools; urine less high-coloured; slight sickness of stomach. Pulv. bi-carb. sod. and tart. acid in effervescence; warm pediluvium, with mustard; a cool mucilage injection at 10 P. M. Mass. ex hydrarg. grs. v. to be repeated early in the morning.

29th, 6 $\frac{1}{4}$ A. M. Sickness of stomach relieved immediately after the exhibition of the soda; pulse 80; tongue cleaning; urine becoming natural; skin good; does not complain; desires food. Arrow root in small quantity and often repeated; continue drinks.

30th, 6 $\frac{1}{4}$ A. M. Saw him several times yesterday; doing well; discharges from bowels yellowish, tinged dark.

31st. Convalescent; allowed chicken water; forbid to take exercise.

September 1st.—Discharged well, with restrictions as to regimen.

CASE V.—W. F. æt. 21, a clerk, sanguine-lymphatic temperament, (second summer in the city,) was attacked, September 8th, 1833, with chilliness, head-ache, pain in lower part of back, sickness at stomach. Saw him a few hours after attack, when he presented the following symptoms. Pulse 130, and full; tongue covered with a white fur, and red at edges; pain on pressing epigastrium; skin hot; head-ache; bowels constipated; pain in lumbar region; thirst. Twelve cups to epigastrium and right and left hypochondrium, and six to lumbar region; ol. ricini, \mathfrak{z} iss., to be followed in three hours by an injection of ol. ricini, \mathfrak{z} ij., molasses, \mathfrak{z} j., and mucilage of flaxseed, \mathfrak{z} viiij.; the injection to be repeated every two hours, until the bowels are freely acted on; cold affusion to head; cold barley water for diet and drink.

9th, 6 $\frac{1}{2}$ A. M. Passed a restless night; pulse reduced to 100, and not so full; head-ache much lessened; sickness of stomach relieved; skin of forehead rather hot; bowels freely acted on; urine of a deep red, and depositing a lateritious sediment; thirst not so great; pain in lumbar region almost entirely abated. Eight leeches behind each ear; repeat injection; ice in small pieces allowed to dissolve slowly in the mouth, in addition to the barley water; tepid bath, with cold affusion to head. 8 P. M. Has passed a more comfortable day. Tongue covered with a white fur, but moist, and less red at edges; pulse reduced to 90; head much relieved by the leeches and cold affusion; bowels opened several times; thirst lessened. Injection of cool flaxseed mucilage, and at 10 P. M. a warm bath and cold affusion, as above.

10th, 6 $\frac{1}{2}$ A. M. Passed a tolerable night; slept several hours; pulse 85; tongue less furred and red; does not complain; urine less

deep colour; bowels open. Arrow root in small portions and often repeated; cool flaxseed mucilage injection repeated.

11th. Continues much in same condition, except a desire for nourishment different from his arrow root, which was not allowed; he is much prostrated. Continue treatment.

12th. Yesterday, after my mid-day visit, he attempted to sit up in bed to stool, and swooned away, from which he, however, soon recovered. His tongue is cleaning, and his condition good. Continue treatment.

13th. Continues to improve; stools yellow. Continue treatment.

14th. Desires urgently to eat. Allowed chicken soup.

15th. Convalescent.

16th. Discharged well, with restrictions as to regimen.

CASE VI.—Mr. M. æt. 22, fully developed, sanguine temperament, first summer in New Orleans, was attacked very severely, September 5th, 1833, with chill, pain in head, back and bones, sick stomach. I saw him an hour after he was taken, and the following symptoms were observed. Pulse 140, and full; skin hot; abdomen hot, and epigastrium painful, pain increased on pressure; bowels constipated; ardent thirst. Twelve cups to epigastrium, right and left hypochondrium, and six to lumbar region of spine; $\frac{1}{2}$ iss. of ol. ricini, to be succeeded by an injection of ol. ricini, molasses, and flaxseed mucilage, every one and a half or two hours, until the bowels are freely acted on; cold barley water for diet and drink. This was at 10 A. M. 9 P. M. Head-ache still continues, but much diminished in severity; tongue furred and red; skin hot; epigastrium painful on pressure; pulse reduced to 120; cups drew well; urine of a deep red; bowels freely opened; thirst continues. Injection repeated; tepid bath with cold affusion to the head; cold drink continued, with ice allowed to dissolve in the mouth.

6th, $\frac{1}{4}$ to 7 A. M. Passed a restless night, without sleep; bowels several times opened; urine deposits a lateritious sediment; head-ache and other symptoms, as above, unchanged. Five cups to back of neck; injection of cold mucilage; warm bath at 10 A. M. with cold affusion to head. 9 P. M. Saw him during the day; pulse now reduced to 100, and much less full; only uneasiness in the head; redness of edges of tongue not so deep; heat of skin greatly lessened; bowels free; urine of a less deep red. Pediluvium; continue barley water; cold to head.

7th, 7 A. M. Passed again a restless night, (a symptom, as far as my observation extends, in the commencement of yellow fever, of a

favourable character,) with only an hour or two of sleep; tongue coated with a grayish fur, inclining to brown; dullness yet in head; pulse 95, bowels free, and discharges slightly yellow. Five leeches behind each ear; continue treatment. 9 *P. M.* Feels comfortable; does not complain; pulse 90; tongue and other appearances but little if any changed; slight moisture on forehead; bowels open. A pediluvium with mustard; thin arrow root, by tea-spoonfuls, every hour or two; a mucilage injection; barley water or orangeade, which latter he calls for, (thirst much lessened.)

8th, 7 *A. M.* Rested well; does not complain; much prostrated; pulse 85; tongue cleaning and less red at edges; stools yellow. Continue treatment.

9th, 7 *A. M.* Saw him several times yesterday; no change in observation, except that his eyes and body are becoming very yellow. He continued without material change until the 12th, when he desired chicken soup, and was discharged well on the 13th, though perfectly yellow. This soon disappeared.

CASE VII.—Mrs. C. æt. 22, sanguine-lymphatic temperament, spent the summer of 1831 in the city, has an infant about ten months old, was seized, on September 7th, 1833, at 8 *P. M.* with pain in head, lower part of back and stomach, preceded by a chill and uneasiness of bones, and languor; bowels constipated. I was called at 9 *P. M.* but owing to indisposition did not go, but prescribed the following:—Thirty leeches to epigastrium; ol. ricini, ℥jss. to be succeeded by injections of ol. ricini, molasses, and mucilage, in two hours; cold affusion to head; barley water for diet and drink.

8th, 7 *A. M.* Passed a restless night; pain of head and stomach not much lessened, as the leeches could not be procured, and a few that were applied by the family drew but a small quantity of blood; bowels have been freely evacuated for eight times; pulse 130, and full; skin hot; pain of epigastrium increased on pressure; tongue furred and red at edges; urine of a deep red. Forty leeches to epigastrium; repeat injection; cold affusion to head; continue cold barley water. 6 *P. M.* Head-ache much lessened after the application of the leeches, the bites of which were allowed to bleed; pulse reduced to 115, and less full; heat and pain of epigastrium much less; slight sickness of stomach; urine and tongue as last noticed; bowels open several times in the day. Bi-carb. sod. with tart. acid occasionally, in effervescence; six leeches behind each ear; warm bath, with cold affusion to head; an injection of cool flaxseed mucilage; as thirst is urgent, ice is held in the mouth and allowed slowly to dissolve.

9th, 7 *A. M.* Slept several hours last night; was much calmed by

the leeches, which drew well, and the cold affusion was most grateful to her; sickness of stomach relieved; tongue furred, white, but redness at edges nearly gone; bowels open several times, but discharges mostly mucus and water; pulse 95; still a slight pain in head; urine becoming of a paler red; thirst not so urgent; skin still warm on abdomen. Mass. ex hydrarg. grs. v. to be repeated at 12 M.; warm pediluvium; cold cloths to head after cold affusion; cold flaxseed mucilage injection; continue barley and iced water. 9 P. M. Head-ache but slight; pulse 85 to 88. Add mustard to warm pediluvium; repeat injection; continue treatment.

11th, 7 A. M. Tongue much improved, and now but little furred; stools darkish-brown; complains but of slight dulness of head; urine nearly natural; pulse 80; skin slightly disposed to moisture, and pleasantly cool. Repeat mustard pediluvium and mucilage injection; thin arrow root in addition to her barley water, (her thirst has been gradually declining.) 9 P. M. Condition good; continue treatment.

12th, 7 A. M. Slept well; desires to eat. Continue treatment.

13th. Condition improving; all organs doing their duty. Panada in addition to her other nourishment.

14th. Desires imploringly to be permitted to eat more; allowed chicken soup.

15th and 16th. Discharged well, with restrictions as to regimen.

CASE VIII.—D. F. from New York, a youth of sixteen, was here last summer, sanguine-nervous temperament very highly developed, was affected on the 11th of September, 1833, about 11 A. M. with chilliness, pain in bones after exposure on the day before to the direct rays of the sun on the levee, attending to the reception of goods. I saw him about 1 P. M. when he had severe pain in head and lower part of back; pulse 140, and full; skin very hot, particularly over epigastrium and abdomen; pain in epigastrium much augmented by pressure; tongue red and tremulous on projection; bowels constipated; thirst. Ten cups to epigastrium, right and left hypochondrium, five to lower part of back; ol. ricin. $\overline{3}$ j. to be followed in two hours by an injection of oil, molasses, and flaxseed mucilage every two hours until bowels are freely acted on; cold affusion to head; cold acidulated barley water for diet and drink. 8½ P. M. Feels a little relieved by what has been done; the cups drew well; pulse 130; pain in head still intense; bowels freely acted on; skin hot; strong desire for cold drinks; tongue becoming much furred and red at edges; stomach not so painful on pressure; urine of a deep red, and depositing a lateritious sediment. Four cups to

nape of neck; repeat injection; at 10 P. M. a tepid bath, with cold affusion to head; ice in gauze allowed to dissolve in the mouth; occasional sponging the body during night with whiskey, and cold to head.

12th, 6¼ A. M. Passed a restless night; pulse 120; tongue greatly furred, white and red at edges; bowels open several times last night; head-ache continues, but diminished in violence; slept none; urine and other symptoms as noticed, except a slight pain in stomach, with nausea. Cold flaxseed mucilage for injection; two cups to epigastrium, which he strongly protests against; tepid bath, with cold affusion to head; carb. sod. and tart. acid occasionally in effervescence.

8½ P. M. Saw him during the day, and directed repetition of cold injection; pulse 115; head still painful, yet slight sickness of stomach; condition otherwise unchanged. Repeat injection; tepid bath, with cold affusion, to remain in the bath for twelve or fifteen minutes; sponge body every hour or two through the night with whiskey; continue drinks.

13th, 6½ A. M. Passed another restless night; pulse 105, and less full; head-ache much lessened; not so furred a tongue, nor redness of edges; urine less deep in colour; skin too warm, and not perspirable; bowels open in the night; thirst continues; sickness of stomach relieved. Repeat injection; tepid bath, with cold affusion to head, and cloths wrung out of iced water constantly to head after the affusion; mass. ex hydr. grs. iv. to be repeated at 12 M.; continue drink; orangade as he desires it. 8½ P. M. Saw him during the day; pulse 95; head still aches; condition unchanged; the family became alarmed, and Dr. Hunt saw him with me. Eight leeches behind each ear; repeat bath, with cold affusion to head; repeat injection; continue sponging body with whiskey; drinks continued.

14th, 6¼ A. M. Was much relieved by the leeches; bowels open; head aches but slightly; complains of a little pain when pressure is made at region of scrobic. cord.; pulse reduced to 85; skin disposed to moisture, and greatly reduced in temperature; tongue less furred, and redness of edges almost absent; slept several hours in the night; is extremely sensitive, and fears the application of a cup to seat of pain in epigastrium. One cup to scrobic. cord.; repeat injection, and bath with cold affusion; a little thin arrow root in addition to his other drink. 8 P. M. Saw him in the day, and directed repetition of injection; pulse now 80; urine assuming a natural appearance; tongue cleaning; skin moist; slight nausea. A warm pediluvium, with addition of mustard; repeat injection; a small epispastic to epigastrium, to remain on for three or four hours; continue sponging

abdomen with whiskey every two or three hours; otherwise continue treatment.

15th, 6 $\frac{1}{4}$ A. M. Passed a comfortable night; rested well; discharge from bowels assuming a dark colour, and of some consistence, and does not complain since the removal of the epispastic, which entirely relieved sickness of stomach; tongue nearly natural; pulse 80. Continue treatment.

16th, 7 A. M. All organs in a good condition; desires to eat; allowed a small piece of toast, and weak black tea.

17th and 18th. Allowed chicken soup, and discharged well on 19th, with restrictions as to regimen; he is much reduced.

CASE IX.—Mr. A. B. H. a merchant, has been in New Orleans several years, but absent for the last two or three summers, most of the time to Omoa, Tuxillo, &c.; he is of a sanguine temperament, and arrived within a week from Omoa; æt. 32. He was taken with a chill and pain in his bones, and sick stomach, September 13th, about 12 M. I was sent for, but did not see him until 2 P. M. when he presented the following symptoms:—Pulse 135; bowels constipated; tongue red and tremulous on projection; severe pain in head and lower part of back; thirst great; skin hot. Twelve cups to epigastrium, right and left hypochondrium, six to lower part of back; ol. ricin. \mathfrak{z} iss., to be followed every two hours by oil, molasses, and mucilage, as an injection, until bowels are freely acted on; cold barley water for diet and drink. 7 P. M. Pulse reduced to 115, and less full; tongue furred and red at edges; bowels acted on several times; urine of a deep reddish colour; pain in head, back, and stomach much lessened after the application of the cups, which drew well; abdomen hot; thirst continues. Repeat injection; and at 9 P. M. a tepid bath, with cold affusion to head; continue barley water iced.

14th, 7 $\frac{1}{4}$ A. M. Passed a restless night; bowels opened four or five times during the night; pain in head, particularly across the eyebrows; urine deep as last noticed, and depositing a lateritious sediment; no pain or sickness of stomach; pulse 110; skin reduced slightly in temperature; thirst not so intense. Warm bath with cold affusion to head; an injection of cold mucilage; continue iced barley water; four cups to nape of neck. 9 P. M. Visited him during the day; head much relieved after cupping; tongue furred, as last noticed, but redness of edges decreased; pulse 100; bowels open; urine not so high coloured; temperature of skin becoming more natural; does not complain. R. Mass. ex hydrarg. grs. v. nocte et mane.

15th, 6 $\frac{1}{4}$ A. M. Passed a tolerable comfortable night, having slept several hours; pulse 90; bowels open; skin disposed to moisture; tongue beginning to clean; not much thirst. A warm pediluvium; thin arrow root by tea-spoonfuls at a time every half hour or hour; cool mucilage injection; continue barley water. 9 P. M. Pulse 85; complains of slight uneasiness of head; urine nearly natural. A warm pediluvium, with the addition of mustard; cool mucilage injection repeated; continue barley water and arrow root.

16th, 7 A. M. Bowels assuming a dark colour, and of some consistency; no uneasiness in head; tongue yet furred in middle, but no redness of edges; skin and pulse good. Continue treatment, with the addition of the juice of an orange, which he desires.

17th, 7 A. M. Saw him last evening, but without observation; he slept well; desires food, which was refused; continue treatment.

18th. All disease gone; stools yellow; desires to eat. Allowed weak black tea and toast, and chicken water during the day.

20th. Discharged well, with restrictions as to regimen.

CASE X.—Mr. H. a bookseller, æt. about 35, has been in the city for twelve or fourteen years, temperament sanguine-lymphatic, the latter most strongly developed, tall stature, has his family across the lake, was seized September 13th, 1833, about 1 P. M. with chilliness; pain in bones; languor, succeeded by fever; severe pain in head, lower part of back, and stomach; (he had been in the habit for some time of taking a small quantity of brandy and water once or twice daily.) I was sent for, and saw him at 3 P. M. when the following observations were made:—Pulse 125; skin hot; pain in head, lower part of back and epigastrium, the latter increased on pressure; tongue red and tremulous on projection; bowels constipated; uneasiness of mind; thirst great for cold drinks. Ol. ricin. ℥iss. to be succeeded by an injection of oil, molasses, and flaxseed mucilage in two hours, to be repeated until bowels are freely acted on; ten cups to epigastrium, right and left hypochondrium, six to lower part of spine; cold barley water for diet and drink. 9 P. M. Pulse reduced to 110, and less full; temperature of skin diminished; tongue beginning to be furred and red at edges; sensibility of epigastrium and pain in head lessened; urine of a deep red colour; bowels have been acted on several times; the cups drew well; thirst continues. Repeat injection; tepid bath, with cold affusion to head, if head-ache then not relieved, eight leeches behind each ear; continue drink.

14th, 6 A. M. Passed a restless night; the leeches were not applied, as the pain in head diminished; urine depositing a lateritious sediment; tongue furred deeply, and red at edges; pulse 105; skin of

abdomen hot; bowels open during the night; a little sickness of stomach. Apply the leeches as directed last night; warm bath, with cold affusion to head; cold mucilage injection; carb. sod. and tart. acid occasionally in effervescence; continue barley water and ice water in small quantity. 9 *P. M.* Head much relieved; tongue not so furred and red; bowels open several times during the day; pulse 95; urine as noticed; sickness of stomach relieved; skin of forehead a little disposed to moisture. Mass. ex Hydrarg. grs. v.; a warm pediluvium; continue treatment.

15th, 6 *A. M.* Got into a slight perspiration after the pediluvium; slept several hours in the night; complains only of a slight fullness in the head; pulse 90; tongue improved; urine less deep in colour. A warm bath, with moderate cold affusion to head; injection of cool flaxseed mucilage; thin arrow root, in addition to other drinks. 9 *P. M.* Visited him during the day; feels much relieved; abdomen reduced very greatly in size; bowels open. Continue treatment.

16th, 6 *A. M.* Stools now present a dark colour, and more consistence; does not complain; tongue improving. A warm pediluvium with mustard added; continue treatment.

17th and 18th. Continues to do well.

19th. Desires porteree—allowed a small portion at a time, also chicken soup.

20th. Discharged well: and on 23d, was enabled to go across the lake.

CASE XI.—Mr. A. M. a merchant, æt. 25, sanguine-lymphatic temperament; the latter most strongly developed; of a very tall stature; has been in New Orleans for three summers; had intermittent fever last spring, and is subject for some time during every change of weather, when it becomes damp and cool, to attacks of St. Anthony's fire, in many of which I have attended him; had a severe attack not more than ten days ago.

He was seized about 11 *A. M.* with chilliness, pain in head, back, and stomach, succeeded by high fever. I was called, but being absent did not see him until 4 *P. M.* when the following symptoms were observed:—Intense pain in head, stomach, and lower part of back; pulse 140 and full; bowels constipated; skin hot; pain of epigastrium increased on pressure; tongue red and tremulous; very much alarmed. Twelve cups to epigastrium and right and left hypochondrium; eight to lower part of back; ol. ricini, $\overline{3}$ iss., to be followed by injections in two hours of oil, molasses, and mucilage, repeated every hour until bowels are freely acted on; cold affusion to

head, and cold cloths constantly applied to abdomen; acidulated barley water for diet and drink. $8\frac{1}{2}$ P. M. Bowels now operating freely; tongue red at edges and furred brownish; pulse reduced to 120; pain in head, back and stomach, much relieved; urine of a deep red; thirst great. Tepid bath, with cold affusion to head; ice in small pieces allowed slowly to dissolve in the mouth; sponge body with cold water every hour or two; repeat injection; continue barley and iced water.

16th, $\frac{1}{4}$ to 7 A. M. Passed a restless and uncomfortable night; is much reduced; head aches; bowels freely evacuated; tongue furred brown in middle, and very red at edges and sides; slight pain of epigastrium, increased on pressure; skin of abdomen hot; strongly solicits ice, and a repetition of bath with cold affusion; urine as last noticed; pulse 110, and not so much force. Two cups to epigastrium and four to nape of neck, all of which drew well; repeat bath with cold affusion; injection of cold mucilage; sponge body every hour or two with whiskey; continue drink; repeat injection at 12 M. 9 P. M. Saw him during the day, but without material change; pulse is now reduced to 100; head-ache absent, but to a dull sensation; complete evacuation of bowels; no pain of stomach; temperature of skin lessened; tongue less furred and red; urine as last noticed. Repeat bath with cold affusion, to be put in the bath without any exertion on his part; if dullness of head continues, to have five leeches behind each ear; a cool flaxseed mucilage injection; barley and iced water continued.

17th, 7 A. M. Slept several hours last night; as dullness of head decreased, did not apply the leeches; is very excitable; pulse reduced to 90; skin assuming a disposition to slight moisture; urine not so deep as last noticed; scarcely uneasiness in the head; tongue becoming more natural; skin of abdomen rather excited; bowels open and now yellowish; thirst much diminished; greatly prostrated. Thin arrow root in addition to barley water, repeated every hour or two; continue sponging abdomen with whiskey, and occasionally a cool flaxseed mucilage injection. $8\frac{1}{2}$ P. M. About 12 o'clock this morning slight sickness of stomach came on, which is now rather increased than diminished, with a disposition to eructation; skin feels pleasant over abdomen and body; pulse 85, and not far from natural; bowels open and yellow in colour. When sickness of stomach came on, carb. sod. with tart. acid, in effervescence, was occasionally administered with but partial relief; much alarmed, and greatly prostrated; (he has been made to use, as all the others were, a bed-pan from the second day of attack.) Emplas. epispa. fort.,

four by six inches, to epigastrium; hot pediluvium with mustard; arrow root every hour or two by tea-spoonfuls; flaxseed mucilage injection.

18th, 6½ *A. M.* Epispastic has raised well, and has just been removed; entirely relieved of sickness of stomach a few hours after it was applied; tongue cleaning and good; every organ seems to be doing its duty well; desires the juice of an orange, which was allowed. Continue arrow root.

19th, 7 *A. M.* Continues to do well; saw him last evening, but without an additional observation; very slowly convalescing; desires to eat. Continue arrow root.

20th. As last reported. Allow weak black tea and toast, and chicken water occasionally by table-spoonfuls in the day.

21st. Great desire to eat more; allowed a soft-boiled egg in addition for morning, and chicken soup through the day.

22d. Is so well that he can sit up for a short time to-day. Continue regimen. From this day to the 24th he improved very rapidly, and is enabled to walk about his room. Discharged, with restrictions as to regimen.

CASE XII.—Mr. J. T. æt. about 26, sanguine temperament, full habit of body, ordinary stature, first summer in New Orleans, was seized this morning, September 14th, (four miles below the city, where he slept every night, at the country-seat of Mr. L.) at 2 o'clock, with chilliness, pain in his bones, and sick stomach, followed by fever, head-ache, &c.; his brother, who was with him gave him ℥iiss. of castor oil. I was sent for, but did not reach him until 10 o'clock, when the following observations were made. Pulse 140 and full; is constipated; oil that he took has not acted; great heat and pain increased on pressure of epigastrium; tongue furred in middle and red at edges and sides; thirst for cold drinks intense; pain in head very severe. Repeat ol. ricin. to be succeeded in two hours by oil, molasses, and mucilage, as an injection, repeated every hour until bowels are finally acted on; twelve cups to epigastrium and right and left hypochondrium, and six to lower part of back, (they were applied by myself, as it would occupy too much time to send to the city,) they drew between xx. and ℥xxiv. of blood; this evening a tepid bath with cold affusion to head; repetition of injection also; barley and iced water in small quantity, and often repeated.

15th, 8½ *P. M.* Bowels acted on eight or ten times since I saw him; still head-ache; pulse 120, and less full; great diminution of pain in epigastrium; tongue furred and red; urine of a deep red, and

depositing a lateritious sediment; diminution in temperature of body; passed a restless night; thirst; was delighted with his cold affusion and bath, (cold cloths were applied also after the cold affusion.) Three cups to epigastrium; three to back of neck; warm bath with cold affusion; cold flaxseed mucilage injection. This evening at 9 o'clock repeat bath and affusion and injection.

16th, 8½ A. M. Pulse reduced to 100; tongue still covered with a white fur, but less red at edges; urine not so deep a red; bowels acted on several times in the night; a little sickness of stomach; no pain of epigastrium on pressure; dull sensation in head; temperature of skin improved; passed a restless night. Warm bath with cold affusion to head; cool mucilage injection; carb. sod. with tart. acid occasionally in effervescence; barley and iced water continued; if dullness of head not relieved by 9 o'clock this evening, eight leeches behind each ear.

17th, 8½ A. M. Passed a restless night, but slept two or three hours; sometimes a little wandering when dozing; the leeches were not well applied, and did not draw at all; stools darkish, and more consistent than before; pulse 85; condition otherwise much improved; is cheerful, and desires to eat something; no sickness of stomach; temperature good; urine almost natural. A little thin arrow root every hour or two; repeat injection of mucilage; continue cold drink, although thirst not urgent; owing to the extreme solicitude for this patient, I continued to visit him again at 5 P. M. when no change for the worse had taken place. This evening at 9 o'clock a warm pediluvium with mustard, and if any uneasiness of head comes on, a cool mucilage injection; continue otherwise treatment.

18th, 8½ A. M. Slept several hours last night, and rested well; no indication of wandering; tongue moist, and nearly clear; pulse 80; skin good; does not complain; bowels open, and yellow; still desires to eat. Continue treatment; to calm him and procure sleep this evening if necessary, five drops of tinct. op. Rousseau.

19th, 8½ A. M. Slept several hours last night; took the tinct. op. Rousseau about 12½ A. M. which composed him; was a little restless previously; bowels open; skin good; tongue clean; does not complain, except of very slight disposition to nausea; desires to eat; thirst gone. Emplas. epispas. four by six inches to epigastrium, to remain on for four or five hours; continue treatment. I left him about 11 o'clock, and his brother came with me to the city, not having left him before for any length of time during his illness; he slept composedly during his absence; the brother returned about 3 o'clock, and found him tranquil and composed, but wishing his blister

removed, which was done; all sickness of stomach removed; I left positive instructions if any change took place to have a messenger despatched forthwith for me.

On my visit of the 20th, same hour as the preceding days, I found that his condition was hopeless, resulting from a violation of my direction in permitting him to get up to stool; he fainted, and the injury done was now too late to be repaired; his brother and a friend who had gone down the afternoon previous were so deluded, that until my arrival they considered him doing well; I found his pulse scarcely perceptible; low muttering delirium; picking of the bed-clothes; tongue and teeth, (sordes,) blackish; brandy injections were repeatedly given; and flying sinapisms to extremities; (deglutition was soon lost;) the injury sustained was past renovation; he died at 12 o'clock; a post mortem examination could not be effected.

CASE XIII.—Mr. A. C. W. a merchant, second summer in New Orleans, æt. 26, sanguine-lymphatic temperament, the former most developed, ordinary stature, was seized with chilliness, pain in bones, sick stomach in the night, about 12½ o'clock, September 16th, 1833. I was sent for, but did not see him until 2½ A. M. and found him in the following condition:—Pulse 140, and full; costive habit of body; skin hot; great sensibility of epigastrium on pressure; tongue red and tremulous when projected; pain of head and lower part of back very severe; ardent desire for cold drinks, particularly iced water. Twelve cups to epigastrium, right and left hypochondrium; and eight to lower part of spine; ol. ricini, ℥iss.; to be followed by injections of oil, molasses, and mucilage, every hour until bowels are freely acted on; cloths dipped in cold iced water to head; iced barley water, and water in small quantity at a time for diet and drink.

6½ A. M. Cups drew well, with much relief to head and back and stomach; pain in head; tongue furred, and red at edges and sides; bowels freely evacuated; pulse reduced to 115; urine of a deep red; diminution of temperature in skin slight; sickness of stomach; thirst continues, and cold drinks and application to head most grateful. Repeat injection; tepid bath with cold affusion to head; continue treatment, with addition of carb. sod. and tart. acid, occasionally in effervescence. 9 P. M. Saw him several times during the day, without difference in observation; his bowels have been acted on four or five times; head still aches; pulse 100; other condition as last noticed; has been drowsy in the day; sickness of stomach relieved. Four cups to nape of neck; warm bath with cold affusion to head; a cool mucilage injection; continue treatment.

17th, 6½ A. M. Head much relieved by the cups; pulse 90; tongue

a little less red at edges, but furred, as noticed, inclining to a brownish-white; urine deposits abundantly a lateritious sediment; skin disposed to moisture on forehead; slept two or three hours last night; slight dullness of head, and nausea. Carb. sod. occasionally repeated; a cool mucilage injection; a warm bath; continue treatment. 9 P. M. Dulness in head still continues; sickness of stomach relieved; bowels open; pulse and other appearances unaltered; except a slight diminution in thirst. Two cups behind each ear; a warm pediluvium; continue treatment; repeat injection. I remained to cup him; while they were applied the candle by accident set fire to the mosquito-net, I instantly pulled it down and extinguished it, but it so alarmed him that he sprang out of bed on the floor; he returned to bed in a very short period, not so much agitated as I feared.

18th, 6½ A. M. Passed a restless night until 2 o'clock this morning, after which he slept several hours; head aches, which is not so severe as I dreaded; bowels open; forehead warm; tongue of a dark-brown fur, with the papillæ projecting through it; pulse in same state as noticed; urine as deep in colour, without depositing sediment; no sickness of stomach; skin warm over epigastrium. Eight leeches behind each ear; warm bath with cold affusion to head; a cool mucilage injection; continue treatment. 9 P. M. Paid several visits to him in the day; head is entirely relieved by the leeches, &c.; has slept several hours; tongue less brown, and papillæ not so projecting, edges diminished in redness; urine not so deeply coloured; pulse 85; skin nearly natural. A warm pediluvium with mustard, and at 8 o'clock a cool flaxseed mucilage injection; continue treatment. Saw him again at 9 P. M. but without any change for the worse, except a little drowsiness; the injection was directed to be repeated.

19th, 6½ A. M. Rested well last night, yet a little drowsy; pulse 80; skin disposed to be perspirable or moist; tongue cleaning and improving; urine approaching natural; thirst absent; desires to eat; bowels open and yellowish. Thin arrow root, by tea-spoonfuls, every hour or two; continue treatment.

21st, 7 A. M. Continues to improve; saw him again last night; desires urgently to eat. Allowed in addition weak black tea and a small piece of toast; this afternoon chicken water.

22d. Doing well; nourishment agreed well with him; desires this morning a soft-boiled egg, which was allowed; chicken soup through the day.

23d and 24th. Discharged well, with restrictions; is up in his room.

CASE XIV.—Mr. C. H. H. a merchant, third summer in New Orleans, æt. about twenty-eight, sanguine-lymphatic temperament,

the former most developed, was seized, Wednesday, September 18th, about 10 A. M. with chilliness, pain in bones and back, nausea, &c. I was sent for, but being absent from the city, did not see him until 1 P. M. He had taken, about 10½ o'clock, ℥jss. of castor oil. The following observations were made when I saw him. Pulse upwards of 140 and full; severe pain in head, lower part of back, and epigastrium; the latter much increased on pressure; skin hot; tongue red; bowels constipated; thirst intense for cold drinks. Twelve cups to epigastrium, right and left hypochondrium, and six to lower part of back; ol. ricini repeated, to be succeeded by an injection of ol. ricin. ℥ij., molasses, ℥j., mucilage, ℥viiij. mixed together, in two hours, and repeated every hour until there are free discharges from the intestines; cold cloths wrung out of ice water constantly applied to head; iced water and barley water in small quantity, and often repeated, for diet and drink. 8 P. M. Feels much relieved since the application of the cups, which drew well; bowels evacuated four or five times; still severe head-ache; pulse reduced to 120, and not so full; is disposed to laugh constantly; tongue beginning to be furred; urine of a deep red. Forbid all company except his nurse; a tepid bath, with cold affusion to head; repeat injection; sponge body every hour with whiskey; ice in gauze allowed slowly to dissolve in mouth, otherwise continue drinks. Four cups to nape of neck.

19th, 6½ A. M. Passed a restless night; pulse 110; cups drew well, and greatly relieved head; bowels open freely in the night; skin reduced in temperature, and pain of epigastrium diminished on pressure; tongue covered with a white fur and projecting papillæ, and red at edges; thirst not so intense; urine depositing a lateritious sediment; slight nausea; more tranquil, and assuming an usual appearance from such symptoms. Soda pulv. with tart. acid occasionally in effervescence; warm bath with cold affusion to head; a cool mucilage injection; continue treatment. 8 P. M. Saw him during the day; pulse now 95; head relieved, excepting a dull uneasy sensation; tongue very much furred; otherwise condition unchanged; nausea relieved. Eight leeches behind each ear; repeat bath with cold affusion; a cool mucilage injection; mass. ex hydrarg. grs. iv. nocte et mane; continue treatment.

20th, ¼ to 7 A. M. Head relieved; slept several hours last night; pulse 85; no nausea; tongue assuming a brownish aspect, but papillæ much less projecting, and less redness at edges; several stools in the night; skin disposed to moisture; urine pale and deposits less sediment; thirst less. A warm pediluvium with mustard; thin arrow root by tea-spoonfuls every hour or two; continue barley water, and

the piece of an orange as it is desired. 8 *P. M.* Has had several alvine discharges of a yellowish colour; tongue improving; condition otherwise improving. Repeat cool flaxseed mucilage injection and warm pediluvium with mustard; continue arrow root, &c.

21st, 7 *A. M.* Slept several hours last night; pulse 80; skin good; tongue still a little dark-coloured, but cleaning; urine nearly natural; stools yellowish; thirst nearly gone. Continue treatment, increasing the arrow root.

22d. Condition improving; desires to eat. Continue treatment.

23d. Tongue nearly natural; does not complain; desires to eat. Allowed jelly in addition to his arrow root.

24th. Improving; his appetite greatly increased. Allowed black tea with boiled milk and toast, and chicken water during the day.

25th and 26th. Chicken soup; a soft-boiled egg. Discharged well, with cautions as to diet and regimen.

CASE XV.—Mr. J. V. a merchant, Frenchman, æt. 36, first summer in New Orleans. I was requested to visit him in consultation with Dr. LACROIX, Tuesday, September 17th, at 1 *P. M.* From Dr. L. I learned that he had been taken with chilliness, pain in bones, back, and epigastrium, succeeded by fever, on the Saturday previous. When I saw him, the following observations were made. He had suppression of urine since the previous afternoon; tongue deeply furred with projecting red papillæ, and red at edges; pulse 140, and quick; bowels had been acted on by injections of *Cassia fistularis*; epigastrium hot and painful on pressure; pain and heat in region of bladder; no turgidity; slight pain in lower part of back; has been taking table-spoonful of saline draught every hour or two since suppression of urine came on; thirst; slight delirium. Four cups to left hypogastric region, four to lower part of back, four to epigastrium; injection of ol. olivæ, molasses, and mucilage; tepid bath with cold affusion to head; mucilage sem. lini. with spts. nit. dulcis for drink; a warm flaxseed poultice to hypogastric region after application of cups; iced barley water, and ice in small pieces allowed slowly to dissolve in the mouth.

18th, 7¼ *A. M.* Urinated freely last evening; pulse reduced to 110; redness of tongue lessened; bowels open; urine of a deep red colour, (or brick;) no pain in epigastrium or lumbar region; temperature of skin diminished, as also thirst; no delirium; slept several hours last night. Repeat bath with cold affusion; a cool mucilage injection; continue treatment. 4 *P. M.* Pulse 95; tongue less furred and red; bowels open; otherwise no change in condition. A cool

mucilage injection; at 9 P. M. bathe feet in hot water; continue treatment.

19th, 7 A. M. Passed a restless night; pulse 90; skin but little excited; urinates freely and much paler; tongue improved and cleaner; his mind is disturbed in relation to his business, and a little flighty; bowels open; thirst lessened. Cold affusion to head; a warm pediluvium with the addition of mustard; a cool mucilage injection; exclude company; five leeches behind ears. 8 P. M. Feels calm; no flightiness after the affusion and leeches. Continue treatment.

20th, 7 $\frac{1}{4}$ A. M. Slept several hours last night; bowels open and yellowish; pulse 80; tongue cleaning; skin disposed to moisture; still a slight injection of eyes. A cool mucilage injection; thin arrow root; continue treatment. 8 P. M. Slept several hours during the day. A warm pediluvium, with mustard; repeat injection; continue treatment.

21st, 7 A. M. Slept several hours last night; all organs appear to be performing their duty; tongue scarcely furred; bowels open and yellowish; desires to eat. Continue treatment.

22d. Doing well; black tea and toast, and chicken water through the day.

23d. Appetite greatly increased; desires and allowed a soft-boiled egg for morning, chicken soup through the day.

24th. Is able to be up in his room; discharged with restrictions.

CASE XVI.—Mr. J. S. P. æt. 20, second summer in New Orleans, sanguine-lymphatic temperament, was taken in the morning of September 25th, 1833, with chilliness, nausea, pain in bones, &c. This was about 10 o'clock. I was sent for, but did not, (owing to absence,) visit him until 1 P. M. when I found him covered up with thick blankets, (although a hot day,) and in a forced profuse perspiration; severe pain in head, lower part of back and epigastrium, the latter increased on pressure; tongue tremulous and red; skin hot; pulse 140, and full; bowels constipated; considerably agitated; great thirst. The covering directed to be removed, so as not too suddenly to check transpiration; warm or tepid lemonade occasionally for drink; ol. ricin. \bar{z} iss. to be succeeded every two hours by injections of oil, molasses, and mucilage, until alvine discharges are freely produced; ten cups to epigastrium, right and left hypochondrium, four to lower part of back. 8 P. M. Owing to the injection pipe not being sufficiently large, the injections have not had the desired effect; bowels have only been once acted on; much relief of head, back, and epigastrium; pulse 120; tongue beginning to be furred; urine of a deep

red colour; skin warm; perspiration gradually declined; thirst as above. Repeat injection as directed; tepid bath, with cold affusion to head; ol. ricin. \mathfrak{z} j.; cold barley water for diet and drink; sponge body every two or three hours during night with whiskey.

26th, 6½ *A. M.* Passed a restless night; bowels freely opened; pulse 100, and not so full; temperature of skin much reduced; tongue covered with a white fur, (papillæ red and projecting,) red at edges; urine as noticed, and depositing a lateritious sediment; slight nausea; thirst not so intense; pain in head, back, and epigastrium absent, except a dull sensation in head; skin of forehead hot. Tepid bath, with cold affusion to head; repeat injection; sponge body every hour or two with whiskey; ice slowly allowed to dissolve in mouth, and if dullness of head continues to 12 *M.* four cups to nape of neck; carb. soda with tart. acid in effervescence occasionally; continue treatment. 8 *P. M.* Saw him since last report; head so much relieved, that the cups were not applied; pulse 95; skin rather warm; sickness of stomach removed; bowels entirely free; other symptoms not materially varied. Warm bath, with cold affusion to head; cold mucilage injection; continue occasional sponging; continue treatment.

27th, 6½ *A. M.* Slept several hours last night; pulse 90; injection passed soon after its administration; skin less hot, and slightly disposed to moisture on forehead; tongue furred, but papillæ less projecting, and not so red at edges; urine as noticed; thirst much decreased. Repeat cold mucilage injection; a warm pediluvium; thin arrow root by tea-spoonfuls. 8 *P. M.* But little change since last visit; bowels open and discharge yellowish. Repeat injection; add mustard to pediluvium, and repeat it; occasional sponging continued; continue treatment.

28th, 6½ *A. M.* Slept several hours last night; pulse reduced to 85; skin pleasant to touch; tongue improving; bowels open; urine improving fast; thirst nearly absent. Continue treatment.

29th. Tongue nearly natural; all organs seem to be regaining their normal action; pulse 80; slept well; desires to eat. Chicken water, and continue treatment.

Was discharged well October 1st.

CASE XVII.—Mr. S. æt. 30, sanguine temperament, second summer in New Orleans, was taken October 5th, 1833, with chilliness, pain in bones, back, and epigastrium, succeeded by fever, head-ache, &c. Dr. BARTON saw him a few hours after attack, and detracted blood to the amount of twenty-four or thirty ounces by the lancet; ordered injections of ol. ricin., molasses and mucilage, every two or three hours, until bowels were freely acted on, (they were consti-

pated;) cold to head; barley water for diet and drink. Dr. B. having to be absent from the city for a week, requested my attendance upon him.

Oct. 6th, 7 P. M. I found him in the following state:—Pulse 120; bowels freely acted on; pain of epigastrium slight on pressure; abdomen and skin hot; intense pain in head; tongue furred, and red at edges; eyes injected; thirst great; urine of a deep red, and depositing a lateritious sediment. Repeat injection; tepid bath, with cold affusion to head; sponge body during the night every hour or two with whiskey, and should head still continue painful after the affusion, eight leeches behind each ear; ice in small pieces allowed slowly to dissolve in mouth, in addition to cold barley water.

7th, 7 A. M. After the bath and affusion, he was so much relieved, that the leeches were not applied; slept several hours; pulse reduced to 90; skin much improved, and not far from natural; bowels freely opened; fur of tongue a little blackish in the centre; thirst greatly diminished; no pain in epigastrium; otherwise unchanged. A cold mucilage injection; occasional sponging; continue treatment. *6 P. M.* Condition but little varied since morning, except now a slight pain in the head. Repeat bath, with cold affusion; occasional sponging continued; continue treatment.

8th, 7 A. M. Passed a restless night; appearance improved; otherwise no excitement felt; pulse 80; a little sickness of stomach, the consequence of neglect of his attendants permitting some exertion when getting out of the bathing-tub, which brought on syncope; tongue but little changed in colour in centre, but redness of edges nevertheless; bowels open; urine deposits less sediment, and more pale; not much thirst; skin good. A sod. pulv. with tart. acid occasionally in effervescence; a warm pediluv. with mustard; a cool mucilage injection; desired and allowed the juice of an orange; continue barley water. *6 P. M.* No sickness of stomach; tongue improved, and beginning to clean; does not complain. Continue treatment.

9th, 7 A. M. Slept well; desires to sit up, but forbid; all organs fast assuming their normal actions. Continue treatment.

10th, 7 A. M. Continues to improve; desires to eat, allowed arrow root in small quantity at a time.

11th. Tongue clean; bowels open and yellowish evacuations; convalescent; allow chicken water.

12th. Continues to improve; appetite greatly increased. Chicken soup in the day, black tea and toast for morning.

14th. Discharged well.

CASE XVIII.—Mr. H. æt. 30, sanguine-lymphatic temperament,

second summer in New Orleans, an intimate friend of mine, was seized about 6 P. M. August 26th, 1833, with chilliness, pain in bones, lower part of back and epigastrium, succeeded by fever, &c. I was sent for, and saw him about 9 P. M. when he presented the following symptoms:—Pain in head, back, and epigastrium, the latter increased on pressure; pulse 140, and full; skin hot, particularly over abdomen; bowels constipated; great desire for cold drinks; tongue red and tremulous. Twelve cups to epigastrium, right and left hypochondrium, six to lower part of back; ol. ricin. \mathfrak{z} iss. to be succeeded in two hours by injections of oil, molasses, and mucilage, repeated every hour until bowels are freely acted on; cold affusion to head; cold barley water, and iced water for drink in small quantity at a time, but often as desired.

27th, 6 $\frac{1}{4}$ A. M. Passed a restless night; bowels freely acted on; pulse 120, but less full; pain of epigastrium, head and back, greatly relieved; nausea; urine red, and deposits a lateritious sediment; tongue furred and red at edges; the eyes injected; cups drew well, (about \mathfrak{z} xvi. of blood;) heat of abdomen and thirst but little varied. Repeat injection; tepid bath with cold affusion to head, and cold cloths afterwards constantly applied to epigastrium and head, otherwise continue treatment, (except in addition carb. sod. with tart. acid, in effervescence, occasionally repeated.) 12 M. Nausea rather increased; bowels freely opened; pain on pressing epigastrium; skin hot. A cold mucilage injection; three cups to epigastrium; continue treatment. 9 P. M. Pulse reduced to 100; sickness of stomach much relieved; yet head-ache; other symptoms but little changed. Repeat cold injection; warm bath with affusion of iced water to head; sponge body every hour or two with whiskey; continue treatment.

28th, 6 A. M. Again passed a very restless night; was much relieved after the affusion and bath, and calls for its repetition; bowels open; pulse 95; skin much reduced in temperature; thirst not so intense; other symptoms as noticed; head aches much less. Continue sponging; repeat injection and bath, with cold affusion; continue iced barley water and water; desires of being allowed to alternate his drink with orangeade. 9 P. M. Much prostrated; pulse 90; does not complain but of dullness of the head; slept about an hour during the day; urine (and tongue not so deeply red, and furred a little brown) less deep in colour; eyes slightly injected, and a little wayward in appearance; bowels open; temperature of skin improved, but no disposition to moisture; thirst increased; but little nausea. Repeat cold mucilage injection; warm bath with cold affusion; four

leeches behind each ear; continue sponging every two or three hours in the night; continue treatment.

29th, 6 A. M. Slept several hours last night, and felt entirely relieved; tongue is less brown and red, and evincing a disposition to clean; no uneasiness in head; bowels open and yellowish; pulse 85, but weak; temperature nearly natural; urine deposits scarcely any sediment; no injection of the eyes, and complains only of a little nausea; disposed to sleep this morning; thirst almost absent; desires the juice of an orange, which was allowed. Sod. pulv. in effervescence, when much nausea; a warm pediluvium about 9 A. M. Continue treatment. 9 P. M. Saw him during the day, but without difference in observation; nausea; pulse 80; bowels open; no pain on pressing epigastrium. Emplas. epispas. four inches square to epigastrium, to remain on until morning, unless nausea is sooner relieved; in this event, to remove it in four or five hours; mucilage injection; repeat pediluvium, with the addition of mustard; continue barley water.

30th. Epispastic soon relieved nausea; it was therefore removed, and dressed with cerate, after which he slept several hours; tongue cleaning; bowels open and discharge yellow; skin good; urine almost natural; pulse feeble; does not complain. Thin arrow root every hour or two; continue barley water.

From this time to September 4th, he continued very slowly to convalesce; he now desires to eat something else, and chicken water is allowed.

5th. Appetite and strength fast increasing; allow chicken soup in the day; black tea and toast for morning.

6th. Fast improving; desires and allowed an egg.

7th. Discharged well, with restrictions as to regimen.

CASE XIX.—Mademoiselle —, æt. 16, a creole of the city, but educated for the last seven or eight years in France, returned home in December last: temperament sanguine-lymphatic, ordinary stature, has menstruated for the last two years, was seized, August 24th, 1833, about 12 M. with rigors, pain in epigastrium and bones, particularly lower part of back, succeeded by head-ache, fever, &c.; her menses should have appeared the day previous, but no indication was presented. I was called at 6 P. M. when the following observations were made. Pulse 130 and full; pain of head, epigastrium, and lower part of back; the pain of epigastrium increased on pressure; skin hot, particularly over abdomen; tongue red; eyes injected a little; bowels constipated; constant desire for cold drinks. Forty leeches to epi-

gastrium; ol. ricin. $\overline{3}$ i., to be succeeded by an injection of ol. ricin., molasses, and mucilage in two hours, to be repeated every two hours until free discharges from intestines take place; a tepid hip-bath; cold barley water for diet and drink.

25th, 6 A. M. Passed a restless night, with but little sleep; pulse reduced to 115; bowels freely opened; pain in head, back, and epigastrium much relieved by the leeches, which drew well; urine now of a deep red, and deposits a lateritious sediment; tongue furred, white, and red at edges; temperature of skin diminished; eyes much less injected; thirst great. Repeat injection; tepid bath with cold affusion to head; sponge the body every hour or two with whiskey; ice allowed slowly to dissolve in mouth; continue treatment. 9 P. M. Saw her during the day, but no material variation; pulse now 110; desired repetition of the bath and affusion; head still aches, and slight pain of epigastrium; bowels freely evacuated, (five or six times in the day;) eyes scarcely injected; other symptoms as noticed. Ten leeches to epigastrium; a cool mucilage injection; repeat bath with affusion; continue treatment.

26th, 6 A. M. Passed a less uncomfortable night than the preceding, having slept two or three hours; only complains of dullness in the head; no pain in epigastrium, and skin much reduced in temperature; pulse 100; bowels open; tongue not so red at edges, but furred, slightly brownish; thirst not so great; urine of a paler red, and deposits not so abundant. Sixteen leeches to inside of thighs; continue treatment. 8 P. M. Feels entire relief of the head; complains of nausea since 12 M.; other symptoms as noticed, except pulse, 90. Carb. sod. with tart acid, in effervescence, every hour or two, while nausea continues; a warm pediluvium; continue treatment.

27th, 6 $\frac{1}{4}$ A. M. Passed a comfortable night; does not complain; pulse 80; skin good; thirst nearly absent; tongue showing a disposition to clean; is much prostrated and reduced; all appearances good; slight appearance of her catamenia. Thin arrow root every hour or two, in small quantity at a time; desires orangeade, which is allowed.

28th. Saw her several times yesterday; tongue cleaning; appetite increasing; bowels open and yellowish. Continue treatment.

29th. Slight nausea came on this morning, owing to an attempt to be elevated in bed, but now has nearly disappeared. Continue treatment.

30th. All nausea gone; desires to eat; allow chicken water. From this date to September 4th, she very gradually improved in strength. Now chicken soup, and a soft-boiled egg was allowed, the latter with black tea and toast in the morning.

6th. Is enabled to be up in her room. Discharged with restrictions.

CASE XX.—The following case presents in the strongest light the truths of physiological medicine. Mr. J. N. H. a merchant, and particular friend of an intimate professional friend of mine, the latter of whom was taken ill and absent from the city. Mr. H. was of sanguine temperament; corpulent habit of body; first summer in the city; æt. about 33. He was affected with the ordinary premonitions of fever, in the night of September 7th, 1833. I was sent for, but the messenger procured another physician. On the night of the 12th of the same month, his friends came imploring me to visit him, as his condition, to use their expression, was hopeless. They had taken upon themselves the responsibility, and left the case, if I would see him, entirely under my guidance. This was at 11 P.M. When I saw him, I requested Dr. Hunt to be called, and, in conjunction, we would attend him, though with extreme reluctance, on account of public prejudice and public excitement. I learned that he had been treated, from the first commencement of the attack, with calomel, charcoal, and pulv. nit. potassæ, in combination, Seidlitz powders, porter, &c. The powders of calomel, &c. I found were still being administered to him, together with the above articles. At this time we noticed his condition as follows:—Convulsive hiccoughs; mind much disturbed, and wandering delirium; discharges of charcoal from the intestines every fifteen or twenty minutes; continually crying, and momentarily expects his dissolution; skin cool; fulness of abdomen; pulse small and tremulous; irritability of stomach; tongue red at edges; thirst considerable, and heat of stomach. Discontinue all previous treatment, and substitute the following. Epispas. ten inches square, to abdomen; cold barley and iced water for drink. In the morning, about 2 o'clock, we were aroused by there having been constant purging, since we left, of the above-described character. We prescribed syrup morphia, which fortunately checked the discharges, and calmed his great nervous excitability.

8th, 12 M. Slept, but disturbed an hour or two after our visit; rambling and delirium continue; epispastic drew well, produced strangury; complains of intense heat; hiccough continues, and acid eructations all morning, and one fit of black vomit about half an hour since, and is preserved on a napkin; the hiccoughs convulse him. Three cups to nape of neck, and administered ourselves a warm bath with iced affusion to head; ice in small pieces allowed slowly to dissolve in mouth; continue barley water. Solut. of hyd. bismuth, table-spoonful every hour or two, so long as eructation continues. 8 P. M. Condition but little changed; bowels have been opened

two or three times to-day, of same character as above; desires a repetition of his bath and affusion, which was most grateful to him; discharge of urine constantly by drops; no more black vomit. Eight leeches behind each ear; repeat bath and affusion; cool mucilage injection; continue treatment, with the addition of a tea-spoonful of thin arrow root occasionally.

9th, 6 *A. M.* Black discharges have occasionally taken place during the night from the intestines; hiccough continues, but less convulsing; delirium less; mind more calm; company has been ordered to be excluded ever since we have seen him; expresses his delight at the sensation of relief produced by the cold affusion. Cool mucilage injection; repeat bath and cold affusion; continue treatment. 8 *P. M.* Saw him several times during the day; getting more tranquil; black discharges less frequent and less deep colour; hiccough, but rather less frequent and much less convulsing; thirst not so intense; head not entirely relieved; urinates rather more freely. Repeat bath and affusion; continue treatment; occasionally the solution of bismuth.

10th, 6 *A. M.* Rested several hours last night; hiccough disappearing; sensation of heat fast vanishing; head as last reported. Cool mucilage injection repeated; ice to head to be discontinued when uncomfortable to feelings; continue treatment.

11th, 6 *A. M.* Saw him several times yesterday, and the forepart of the last night; the ice to head was discontinued in two or three hours from its application; hiccough nearly ceased; all evidence of irritation absent; urinates well; is tranquil; discharges from bowels begin to assume a natural appearance, (yellowish.) Continue treatment; barley water and arrow root. 4 *P. M.* Hiccough gone; is cheerful; pulse good; no wandering; continue arrow root and barley water. 8 *P. M.* Company in our absence have intruded, and conversed with him on business transactions, which has produced symptoms threatening more than ever his dissolution; he has parching thirst; extremities cool; pulse quick and feeble; tongue red; delirium. Epispastic to nape of neck; a cool mucilage injection; continue treatment. 2 *A. M.* We were aroused from bed, and found him exceedingly restless, tossing in every direction in bed; such was the condition of his mind, that we feared to let him see us at that hour of the night, but unobserved by him we prescribed a cool mucilage injection; a warm pediluvium with mustard; and the epispastic to be removed and dressed, it had drawn well.

12th, 6 *A. M.* Got more calm after the above directions were executed, and dosed for an hour or two; is now more quiet;

delirium greatly abated, &c. pulse weak; extremities improved in temperature; thirst diminished greatly; discharges from intestines yellowish. Injection of weak beef tea every two or three hours; ice in mouth. 8 *P. M.* Saw him several times during the day; appearance has been fast improving; has become entirely calm; no wandering. Injection of beef tea repeated; a warm pediluvium with mustard; thin arrow root occasionally.

13th, 6 *A. M.* Rested and slept calmly several hours last night, is again cheerful and free from any trace of irritation. Allow a little jelly occasionally through the day. From this date to 19th his nourishment was gradually made more nutritious and increased, and is on last date enabled to be up in his room.

20th. Discharged well.

New Orleans, January, 1834.

ART. III. *Cases of Gastritis Superinduced.* By THOMAS J. CHARLTON,
M. D. of Georgia.

THE physiological practice is entitled not only to the positive merit of curing disease, but also to the no less important negative one of preventing the use of injurious and empirical remedies. In truth, when we remark the delicate structure of the mucous membrane of the primæ viæ, and the essential nature of their normal condition to health and vitality, and at the same time reflect what improper and corrosive substances were lavishly placed in contact with it, we can scarcely refrain from asserting that in very many cases the disease was less dangerous than the physician. Most especially in the fevers of warm countries has this membrane suffered from injudicious treatment; the more intense its inflammation the more industriously was this added to by tonics and diffusible stimuli, and when by these means it approached disorganization, evincing itself by the black tongue, cold skin, and the debility, it was said to be reaching its ultimatum, and to be only remediable by the most profuse administration of the most powerful excitants. Is it wonderful that the supposed typhus state of fever, was common and fatal under a *modus medendi*, as rational as that which in Turkey loads the sufferer from small-pox with warm clothing, applies hot plasters to the eruption, and diets him on hot caviare?

The truth of the inferences which the able founders of the physio-

logical school have drawn, not only from the fallible, (and heretofore principal basis of medical systems,) ontology, but also from numerous and minute post mortem examinations, will eventually carry conviction to all minds sufficiently candid to reject error when convinced of it, however fatal such rejections may be to favourite theories. BROUSSAIS' works are already in the hands of nearly every intelligent physician of our country, and the plan of treatment inculcated in them is becoming established in chronic disease of the viscera, but those of an acute character are still frequently subjected to the "incendiary practice," and as long as this is the case, it is the duty of every medical practitioner to furnish such facts as may have occurred to him, leaving the inferences to the candour and discrimination of the profession. It is with this view that I offer for publication the following cases taken from many others of a similar character, and equally conclusive.

Francis Demere, nine years old, had been attacked with the usual symptoms of climate fever, five days before I saw him; being at some distance from medical aid, he was treated by his parents. On the second day a cathartic was given, which increased the nausea and vomiting, which had existed from the onset; another was given on the third day, with the same effect, and from the continuance of this symptom he was supposed to be suffering from a redundancy of bile, and that an emetic was indicated; one grain of tartar emetic was administered, which increased the distress and nausea, but did not cause much vomiting; all his symptoms became worse, and when I saw him, (12th August,) his pulse was small, and 125 a minute; his skin very cold; complexion palled; and the tongue brown; I recognised gastritis, and ordered blisters to his extremities, and small quantities of gum water, acidulated with orange juice for drink; the tongue in six hours became cleaner, the skin warmer, and the pulse fuller and slower; but at the accession of the cold stage of the next paroxysm, (the type was double tertian,) the debility appeared so urgent that I was induced to give a tea-spoonful of wine every fifteen minutes; this stimulant evidently increased the gastritis, the tongue became dark again, the skin cold, and at the same time there was intense suffering from internal heat, and an urgent demand for cold drinks. I determined to resume and adhere to the plan of treatment first adopted; at each accession of the paroxysms I endeavoured to sustain the system by the application of mustard plasters to the abdomen and extremities, and during the paroxysm I gave the gum Arabic water and lemonade. I was gratified by seeing the evidences of gastritis slowly subside, and by a gradual resumption of food, the patient acquired his usual health.

The next case I have selected is that of a negro. Catherine, twenty years old, had been attacked with pleurisy seven days before I saw her; she had been bled, but not sufficiently, and had taken a cathartic and two emetics of the sulphas zinci; when I saw her, gastritis had been superinduced, her pulse was quick and small, there was great distress and oppression in the epigastrium, the tongue was dark, and she was comatose when not roused. The cough was not troublesome, the expectoration was copious, and the respiratory murmur as distinct as usual, there was no evidence of effusion in the thorax. Believing her to be suffering more from mal-practice than from the original disease, I directed my efforts to the purpose of subduing the gastric irritation which I attribute to the emetics. I cupped her over the epigastrium, and gave her small quantities of flaxseed mucilage cold frequently. The disordered intelligence soon improved, and the tongue became clean; but having indulged in the use of food at night, all her symptoms became worse, and her disease appeared to be approaching a fatal termination. I directed blisters to the legs and abdomen, purgative enemata and gum Arabic water. The termination of her disease was long doubtful, but she eventually recovered by a persistence in the use of mucilages and a rigid diet.

Bryan County, Georgia, January 15th, 1834.

ART. IV. *Thoughts on the Bilious Remittent, commonly called Congestive Fever.* By THEODORE BLAND DUDLEY, of Alexandria, Louisiana.

SOME one has said quaintly, but forcibly, that “words are the counters of wise men, but money of fools.” It is much to be lamented, that in medicine, as well as in religion and politics, there should be so much of fanaticism prevail; words or names are substituted for things, and reasoning in a specious but delusive garb, often misleads even those who are most proud of assenting to nothing that is not sanctioned by its dictates. Why else is it, that some favourite dogma in our science, from the days of PARACELsus to the present time, always has its day? SANGRADO with his warm water; BROWN with brandy and opium; RUSH with his lancet; to a host of minor luminaries, with their drachms of calomel, which they unceasingly pour down without scruple.

These reflections have grown out of the present prevailing notion,

that calomel, and calomel alone, should be our sole reliance in the treatment of the various grades of remittent fever of southern climates. It is a Samson indeed, and its strength may be applied to useful and salutary purposes; but that does not warrant, in the eye of dispassionate and philosophical reasoning, the tearing down the temple, to the utter destruction of the edifice and its inmates.

The mode of reasoning of the advocates of this Herculean system is simply this, that in a certain form of fever commonly called congestive, there is an engorged state of that complex and important organ called the liver, whose office is the secretion of bile, so essential to the healthy action of the animal economy—that calomel having a more decided specific action on that organ than any other known agent, it must be given *ad infinitum*, till the liver is brought into subjection, and a healthy performance of its functions. This is plausible reasoning, and would be valid enough, if the fact be admitted, that it will generally produce the desired result without any concomitant evils; and it were equally well established, (as they assume,) that there are no other agents, which alone, and especially as adjunct to the mercurial system moderately enforced, will produce the desired result without its concomitant evils.

The theory that the mercurial fever is essential to subduing that already existing, is, I think, *toto cœlo*, fallacious. It has arisen from the fact, that in particular grades of morbid excitement in this congestive fever, when salivation is induced, the patient becomes convalescent; it is inferred from a very common, but fallacious mode of reasoning, (the placing effect for cause, and vice versa,) that salivation is essential to cure. But I believe that in every instance, where this state of things results, the same effect would have ensued from a much more simple and harmless procedure, the evacuant and sedative course; convalescence is more speedy, and the horrible consequences that occur when salivation cannot be induced, viz. mercurial gangrene often, and chronic mercurial disease generally would be obviated. I have witnessed in numerous cases the most shocking and deplorable consequences from this pernicious abuse of mercurials, the patient dying by inches, an object of the most intense and agonizing sympathy to the friends, and of loathing and horror to the spectator, of hopeless wretchedness.

The autumnal remittent, commonly called congestive fever, as it usually prevails in the southern part of the United States, and especially on Red River, where the writer of this article has seen and marked its character, commonly commences with the usual precursors of fever—languor; lassitude; indisposition to action; loss of appe-

tite; chill, not always distinctly sensible to the patient, but with evident shrinking of the extremities, followed by febrile paroxysm, more or less sensibly developed; yellow discoloration of the skin, and especially of the conjunctive coat of the eye. The patient for several days is able to go about, but finally confined by aggravation of all symptoms. Excessive irritability of stomach now comes on, accompanied by torpor of the bowels, which are with difficulty moved by ordinary cathartics. During the cold stage, which often continues from four to six hours, the irritability of stomach is greatly aggravated, and is indeed one of the most distressing and uncontrollable symptoms of the disease. The pulse is feeble and thready, not much increased in frequency, and greatly diminished in volume. The tongue is furred, and of various colours, from light brown to a dark inky hue; generally moist.

If this state of things is not met with promptitude and energy, there is a rapid decline of all the vital powers, and the patient dies on the seventh, ninth, or eleventh days. The disease invariably assumes the tertian type, the paroxysms being more violent on the alternate days; there is however a daily chill, which on the odd, or critical days, is greatly aggravated.

The indications of cure are obviously to equalize action, to abstract from organs most labouring under a suffocated state of excitement, and to invite action to those parts where there is an evident deficiency. With this view during the remissions, it is desirable to produce a prompt action on the bowels by cathartics, and of this class of medicines, I have found calomel combined with rhubarb alone, and sometimes with aloes, as in the following prescriptions, the most efficient. *R. Merc. mit. gr. x. vel xij.; pulv. rhæi, ℥j.* Or the following:—*R. Merc. mit., pulv. rhæi, pulv. aloes socot. āā. gr. x. M. ft. pill. vel bolus.* In from three to six hours, should there be no decided effect on the bowels, give an active dose of castor oil, and should this fail, cathartic enemata should be freely administered, till the desired effect be produced. During the hot stage, the free use of saline diaphoretics has the happiest effects in counteracting the unequal distribution of the excitement, tending to an evident mitigation of all the violent symptoms; as soon as diaphoresis manifests itself, with this view, whenever the hot stage is decidedly developed, unaccompanied by irritability of stomach and vomiting, the following prescription will prove highly beneficial. *R. Antimon. tart. gr. j.; pulv. nitri. ℥ss.; aq. font. ℥vi. M. ft. mist.* A tablespoonful to be given every hour till free perspiration supervene. Should the inflammatory action run high, and the above prescription

fail to produce the desired effect, the lancet should be called into its aid. But should there be great irritability of stomach, as is often the case, the following prescription should be substituted. R. Carb. potassæ, gr. x.; aq. font. ℥j.; succ. limon. q. s. ad ejus saturationem—quâque horâ adhibenda donec supervenirit diaphoresis.

Should this fail to allay the irritability and vomiting, apply a large blistering plaster over the region of the liver and stomach, and recur again to the purgative enemata, either of which remedies alone has the happiest effects in arresting vomiting, and relieving the sensation of anxiety and oppression, which are in most cases horribly severe.

In this state of things the patient often complains of intense burning sensations, and anxiously beseeches the use of the fan to produce ventilation; when the parts so complained of are greatly below the natural temperature; when the extremities are cold, and the general temperature of the body is below the healthy standard.

During the existence of this stage of the disease, so distressing to the patient, (for this is the period of greatest anxiety and suffering,) I have found the semicuprium followed by frictions, with a warm infusion of Cayenne pepper in brandy, to act most powerfully in producing revulsion: sometimes sinapisms or blistering are necessary to keep up a permanent impression: often hot bricks or bladders, or bottles filled with hot water, will have the desired effect.

There is always a marked alleviation of all the urgent symptoms of this fever as soon as free alvine evacuations are produced, which exhibit in colour and consistence almost every variety of shade. Sometimes in milder cases simple bilious discharges are produced, and such cases are soon brought to a favourable crisis, by keeping a constant eye to the free evacuation of the bowels during the remissions, and the use of the saline diaphoretics above-mentioned during the febrile paroxysms; but in other cases of aggravated forms of the disease, this desideratum is with difficulty obtained. There seems to be so great an accumulation of morbid secretions producing torpor of the bowels, that the most active cathartics appear feeble and inefficient; in this state the exhibition of active cathartic enemata as adjuvants is attended with the happiest and most decided good effects.

The writer has witnessed cases where the degree of exhaustion was so great that the patients had become pulseless, and all the ordinary precursors of approaching dissolution were rapidly developing themselves. When the exhibition of strong purgative enemata has been resorted to, bringing away copious acrid, vitiated secretions, there has been a return of pulse, and an increased strength and fulness after

each discharge, and this in cases too, where a timid and cautious practitioner would dread exhaustion from purgation.

Whenever local congestions exist, cupping and leeching are highly salutary—the pulse becoming slower and fuller, even after a very small abstraction of blood has taken place. As soon as this happy result occurs, viz. a more generally diffused state of the excitement, a remission of all the urgent symptoms immediately follows, and convalescence is speedily established, which requires little further to complete the cure than a due attention to the state of the bowels, and a strict regard to diet.

ART. V. *An Account of a New Instrument for Operating in Cases of Fistula in Ano.* By THOMAS D. MUTTER, M. D. one of the Physicians to the Philadelphia Dispensary, &c.

FROM the time of HIPPOCRATES down to the present day, no disease has excited more attention, and been studied with more success, than the one termed, (though very incorrectly in most cases,) fistula in ano: its causes, its phenomena, the indications to be fulfilled in its management, have all been clearly and positively demonstrated; it would therefore be worse than useless for us to enter, at this late period, into an elaborate history of the disease. It will be necessary, however, to notice the usual divisions of fistulæ, in order to render apparent the design and *modus operandi* of the instrument about to be described. When a discharge by incision of the contents of an abscess situated in the neighbourhood of the rectum has been too long delayed, the matter will of its own accord force for itself an opening, either through the external parts in the neighbourhood of the anus, or through the parietes of the rectum. Occasionally it happens, that we have both an internal and external orifice, existing at one and the same time. These different conditions have given rise to a division of anal fistulæ into three species—1st, those in which the matter escapes by one or more openings through the integuments alone, and which are called “blind external fistulæ;” 2d, those in which the matter empties into the cavity of the rectum, and no external opening exists, which are called “blind internal;” and 3d, those in which an opening exists both in the gut and skin, which are termed “complete fistulæ.” Notwithstanding the assertion of MM.

FOUBERT and RIBES, and to which opinion SABATIER inclines, "that no such thing as a blind external fistulæ can exist, and that in *all cases* there is an opening into the gut," both experience and reason lead us to contend, that so far from this state of things never occurring, it is the most common variety of fistula in ano; and this I believe is the opinion of the most experienced surgeons of the present day. The difficulty with which a sinuous ulcer, when located in loose cellular tissue, heals, has long been fully appreciated, and numerous methods of effecting this end have been introduced into practice; caustics, stimulating applications, incision, extirpation, &c. have all been tried at different periods, and with varying success. The father of medicine long ago taught this fact, and to him are we indebted for the very measures made use of at the present day in the treatment of fistulæ, though modified it is true, both as regards the cases to which they are applied, and the instruments employed. The indication to be observed in the treatment of fistula in ano, (a disease belonging to the class of "sinuous ulcers situated in loose cellular tissue,") is the division of the barrier existing between the sinus and the cavity of the gut, and formed chiefly by the walls of the latter, by which means the two cavities will be thrown into one, and an open sore, instead of a hollow sinuous one, established.

The ancients were fully aware of the importance of this indication, and their remedies for the most part were directed to obtain its fulfilment. In some cases, however, they attempted to heal the sinus by the introduction of caustic substances into its cavity. It may not prove uninteresting or inapposite to pass in review some of their different plans of treatment, and first of *Caustics*. Hippocrates formally recommends the application of caustic substances to the internal surface of a fistulous canal. He applied them by means of a linen tent, (of sufficient length to pass from one orifice of the fistula to the other,) which was first rolled in cerate, and then dusted over with the substance to be used. It was introduced into the tract of the fistula by means of a probe, to which it was attached by a thread; this was introduced through the external orifice and brought out through the anus. A suppository of horn was then inserted into the rectum. On the sixth day the caustic tent was removed, and a simple one introduced in its place; the horn suppository was likewise removed, and replaced by one of alum. This practice was founded upon the supposition, that the parietes of every fistulous canal were necessarily callous, an opinion which it is almost needless to say, is erroneous. The plan, however, seems to have never ac-

quired much reputation, and had nearly fallen into oblivion, when it was revived by DIONIS, in France. Since his time, though frequently spoken of by surgical writers, it has never been introduced for obvious reasons into general practice.

Cautery.—Passing a bistoury heated to a white heat along the tract of the fistula, has also been recommended; this method of course never obtained much reputation. The rationale of its operation is obvious.

Ligature.—The treatment of fistula by the ligature is no less ancient in its origin than that by caustic. To the Coan sage we are also indebted for this practice, though CELSUS, among the ancients, may be considered as having given the most lucid and useful description of its application and *modus operandi*. Almost every writer since his time has taken especial notice of this practice, some recommending it as the most certain, least painful, and least dangerous of all methods hitherto made use of; others again condemning it as tedious, painful, and uncertain. DESAULT, among the more modern authorities, directs it to be employed in all cases where the fistula extends beyond the reach of the finger, and where from the position of the neighbouring vessels they must unavoidably be wounded in any operation performed with a cutting instrument. His practice was to pass a leaden wire through the fistula, and then bring it out at the anus. The ends of the wire were then twisted together, and the loop gradually tightened every day. By this means, ulceration and absorption of the barrier between the gut and sinus would in time be effected, and the two cavities converted into one. The ligature is sometimes made use of at the present day in similar cases, though for the most part it has been entirely abandoned.

Extirpation.—It is as yet a mooted point to whom the credit of this operation is due. POTT gives it to GUY DE CHAULIAC; BERTRANDI to ÆTIUS, who wrote about the end of the fifteenth century. CELSUS also mentions it. However this may be, the modern surgeon never thinks of employing it, except perhaps in those cases in which several fistulæ communicate with each other, the parietes of which are exceedingly callous or scirrhus. In all others it should be rejected, as it is frequently followed by hæmorrhage, fever, profuse suppuration, diarrhœa, and contraction of the orifice of the anus from loss of substance. It consists in the extirpation of a slip or narrow portion of the barrier between the gut and sinus, by means of two parallel incisions, and its object is to prevent the too rapid healing of the wound.

Incision.—The most experienced surgeons of the present era have

for a long time abandoned these different methods, (with the exception of the ligature occasionally used,) and confine themselves to the operation, in which the tissues situated between the sinus and cavity of the rectum, are merely divided or incised. It is to Hippocrates again, that we are indebted for this operation, which, although restricted by him to those cases in which there existed no communication between the fistula and the cavity of the gut, has been applied by modern surgeons to almost all conditions of the disease. Various instruments and plans of operation have been invented to effect this end with the greatest facility to the operator, and with the least pain to the patient. The French method differs materially from the English and American. In the French operation, a kind of director, called a gorget, which is usually made of ebony wood, and intended to be introduced into the rectum, with its concavity turned towards the fistula, is made use of. After this has been properly placed, a steel director, inflexible, slightly pointed, and without a cul-de-sac, is passed through the fistula until its point comes in contact with the wooden gorget. A long, narrow, sharp-pointed, straight bistoury, is now introduced along the groove of the steel director, till its point meets the groove of the ebony gorget, by cutting upon which all the parts are divided which lie between the internal opening of the fistula and the anus. The English operation is performed with merely the forefinger of the left hand introduced into the rectum, and a knife, which is passed through the fistula until it arrives at the finger, in ano. The two, after being properly balanced, are then withdrawn together, dividing as they pass along the barrier between the rectum and sinus. This operation is superior to the French, inasmuch as it is more simple, and more easily performed. There exists, notwithstanding, a difficulty to be overcome of no trifling importance in some cases, and which is occasionally a source of embarrassment to the surgeon, when the latter operation is performed: it is the introduction of the knife into the cavity of the rectum when no communication between it and the sinus exists. The ingenuity of different surgeons has led to the introduction into practice of several variously-contrived knives, which have been invented with the design of effecting this indication, and at the same time guarding the finger of the surgeon from all danger of being wounded. For the most part, all of those which have come under our observation are faulty in some respect or other. Before, however, entering upon an analysis of their merits, it may be as well to state what indications an instrument intended for operating in fistula in ano, should be capable of fulfilling. In the first place it should be so constructed that it may be used in *all cases* of fistula,

whether complete or incomplete. 2d. Its blade should be shielded so as not to cut the tract of the fistula as it is introduced; by which means the patient is saved a great deal of pain. 3d. Its point should be so formed, that the finger of the operator, during the division of the parts, will be in no danger of being wounded by it. 4th. It should be sufficiently small to admit of easy introduction into fistula of the usual size. 5th. It should be *simple and cheap*. Let us see if the instruments usually employed fulfil all of these indications.

Probe-pointed bistoury.—To the common probe-pointed bistoury, the instrument generally recommended as the most simple and easily used, it may be objected, in the first place, that in cases where it is necessary to make an opening into the rectum, it will not answer from the bluntness of its point; for it will be found almost impossible to make it penetrate the gut, provided the latter be in a healthy condition, notwithstanding the assertion of a celebrated author, “that the smallest degree of force will thrust the point of the knife through,” to the contrary. 2d. That it, (as well as any other instrument, the edge of which is not protected by a sheath,) will give the patient unnecessary pain, by cutting the whole tract of the fistula, as it is passed on to the gut. Hence it is seen, that it does not answer the two most important indications in the operation, though it does the three others.

Sharp-pointed bistoury.—Should the sharp-pointed bistoury, which has been recommended whenever it becomes necessary to make an opening into the gut, be used, the surgeon's finger will most inevitably suffer, and in some cases severely, from the sharp point of the knife necessarily pressing forcibly upon it. It has been recommended to shield the finger, either with a common thimble, or a piece of sheet lead; should either be used, it has a bungling appearance, and does not always answer the end intended. The same objections then, which were made to the probe-pointed bistoury, are applicable here, with the additional one of its always wounding the operator's finger more or less severely.

Physick's bistoury.—Some years ago Dr. PHYSICK, fully aware of the imperfections which existed in the instruments usually employed in fistula in ano, had one constructed, decidedly the most ingenious and useful that had hitherto been proposed. It consists in a sharp-pointed bistoury, enclosed in a moveable sheath or guard, so arranged that when the knife is furnished with its guard, it resembles a probe, and may be passed down to the bottom of the sinus, without causing any more pain than would be produced by the introduction of a common probe. When it has reached the gut, by pressing slightly upon the

guard, which is attached in a peculiar manner, the latter may be removed, whilst the naked blade remains in the sinus. When a hole is to be made through the gut, the guard must be first disengaged. This instrument combines, to a certain extent, the advantages of the blunt and sharp-pointed bistouries, and is infinitely superior to either when considered alone. There are however some objections to be made to it; in the first place, the sharpness of its point when the guard is removed, will almost to a certainty subject the finger of the surgeon to a severe wound; 2d, as the blade gradually increases in width towards the handle, where it is quite large, its introduction will cause pain, unless the fistula is much larger than it usually is; 3d, it is complicated and expensive.

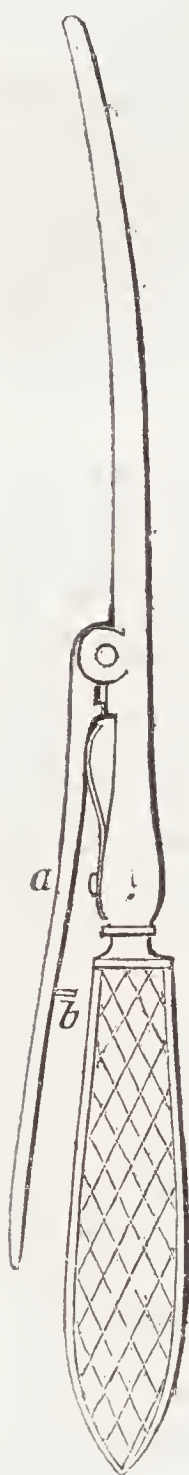
Bistoury of Cruikshank.—The bistoury of Cruikshank may probably be considered as the best instrument met with at the present day in practice, though it is liable to the objection of cutting the fistula as it passes through its tract, and also of being wider than necessary; it is moreover expensive. It is constructed with a moveable stilet, which passes along the side of the blade, and may be pushed forward or retracted at pleasure; its point is intended to pierce the gut, and then to be withdrawn, that the surgeon's finger may rest on the blunt extremity of the knife.

This completes the list of instruments usually made use of in practice; many others have been invented, none of which, I believe, have acquired any reputation, or at best only an ephemeral one. No instrument, however, it is seen, has ever been proposed, which answers all the indications stated above. Let us see if the one about to be described comes up to our definition of "a fit instrument for fistula in ano." To FRERE COME, or rather to BIENNAISE, are we indebted for the principle of the "bistoiré caché." Hitherto it has been confined chiefly, if not exclusively, to instruments intended for the operation of lithotomy; at all events, I believe it has never been applied to an instrument for operating in fistula in ano. Struck with the advantages that an instrument contrived upon this plan, modified however as regards the arrangement of the blade, would possess over any other as yet invented, with the assistance of Mr. Rorer, instrument-maker, I fashioned the one represented in the annexed cut. Like the lithotome caché, it consists in a handle and blade part, the latter four inches in length, and one and a half lines in diameter, slightly curved, and excavated so to form a sheath for a knife of its own length. Instead of terminating in a closed beak, or cul-de-sac, like the lithotome, it is opened at its extremity, to allow the knife to be pushed forward like a stilet. The handle of the

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knife being so arranged, that it operates as a lever, the knife, as in the lithotome, may be made to start out from its sheath, by depressing

No. 1.



No. 2.



No. 1. Represents the instrument closed, as when it is about to be introduced into the fistula. *b.* The steel pin, which prevents the knife from slipping forward when the lever is depressed. *a.* The lever in the position it occupies when not depressed.

No. 2. Represents the mechanism of the instrument. The lever depressed. *c.* The knife thrown out of its sheath by the depression of the lever; its point projecting beyond the beak, as when it is used as a stilet. *d.* A part of the mortice in the shank of the knife, which permits it to be pushed forward, or retracted at pleasure.

its handle. By means of a mortice cut in the shank of the knife, through which the rivet attaching the knife to its sheath passes, the former may be shoved forward, or retracted at pleasure, like a stilet in its canula, by merely acting upon its handle. The point of the knife should be sharp, and its width throughout sufficiently narrow to admit of its being completely concealed by its sheath, to avoid cutting the fistula during the introduction of the instrument. To prevent the knife from slipping forward, when the lever is depressed, which it will do, after the instrument has been used several times, a small steel pin proceeds from the handle of the *knife*, and fits into a small, round hole in the handle of the *sheath*. The object of the knife being made moveable in its sheath is, that in cases where there exists no opening in the gut, one may be made by merely pushing upon its handle. The principle upon which the instrument operates, is obvious at once, and its great utility in cases of blind external fistula must be equally apparent. It is used in the following manner:—The patient having been properly prepared for the operation by previous treatment, is to be placed as in the usual operation for fistula in ano—upon his hands and knees, with the light falling upon the buttocks. The surgeon then passes the fore-finger of his left hand, well oiled, into the rectum of the patient. The instrument also well oiled, and closed as in No. 1, (see cut,) is then passed through the external orifice, and along the tract of the fistula, until it arrives at the orifice, (provided one exists,) in the gut; its blunt extremity is then received upon the finger in ano, and the two properly balanced; the lever is then depressed,

the knife starts out, and the finger and instrument being drawn out together, all the parts intermediate to the inner orifice of the fistula

and the anus, are divided, and the two cavities converted into one. When however no opening exists in the gut, the operation differs somewhat from the one just described. The finger and instrument are introduced precisely as in the other case, but instead of their coming into immediate contact at their extremities, they will be separated from each other by the wall of the rectum. An opening of course becomes necessary, and may be made in the following manner:—Having determined by the touch the spot through which it is to be made, the surgeon slips his finger from the point of the beak, a little to one side of it, whilst with the thumb of the hand holding the instrument, he thrusts forward the knife, by acting upon its handle; its point is thus made to penetrate the coats of the gut, and an orifice large enough to permit the instrument to pass into the cavity of the rectum is established. The stilet is then to be retracted, the point of the finger and the blunt beak of the instrument balanced upon each other; the lever depressed, and the operation finished as in the first instance. The wound is to be dressed as in the ordinary operation for fistula in ano, and the after treatment is precisely the same. It will be seen at once, that this instrument fulfils to the letter the different indications in the operation for anal fistulæ. It may be used in *all cases!* its introduction gives the patient no more pain than would be produced by the passing of a common probe! The finger of the operator is perfectly secure from all injury! it is so small, that it may be introduced into almost any fistula without difficulty, and it is simple and cheap. It possesses moreover the advantage of being applicable to many other operations. It can be used in all cases of fistulas, in whatever part of the body they may occur, in phymosis, in fissure of the anus, in abscess of the fauces, in hernia, &c.

ART. VI. *A case of Hepatic Abscess, in which Tapping was Performed before Adhesion of the Liver to the Side had occurred; and the Appearances after Death.* By W. E. HORNER, M. D. Professor of Anatomy in the University of Pennsylvania.

ROBERT MILES, tax-collector, a respectable and valuable citizen, aged fifty-four, a short, stoutly-built man, whose habit of body had been impaired by previous attacks of sickness occurring at distant intervals, and by hæmorrhoids; was seized about the 1st of December, 1832, with symptoms of dysentery, which disappeared under treat-

ment by Dr. Chapman and myself in sixteen days. They seemed to be connected with an elastic tumour of an inch in diameter in the linea alba of the epigastric region; this tumour was taken for a hernia of the stomach or colon, and having diminished much as he convalesced, got entirely well in a few weeks afterwards.

On the 25th day of May, 1833, he suffered from an attack of colic followed by diarrhœa, and the bowels continued loose and irritable for some time.

July 18th, being in the country for the recovery of his health, he was seized with severe pain in the epigastric and right hypochondriac regions, attended with fever, and came under the professional treatment of Dr. VANDYKE, to whom I am indebted for the following statement:—

“DEAR SIR,

“On the 19th of the month of July, 1833, I was requested to visit Mr. Miles at the residence of his son-in-law, Capt. Robinson. The general appearance of the patient evinced debility and emaciation of body. The complexion pale and sallow, pulse frequent and feeble, coldness of the hands and feet, indicating a disturbed balance of circulation. He complained of an obtuse pain in the right hypochondriac region, sense of fulness after eating, but could lie on either side without any sensation of weight or dragging, from which I inferred that no morbid adhesions then existed; had no cough; appetite diminished, and digestion imperfectly performed; slight and irregular chills were felt through the day, and a febrile paroxysm occurred every evening, terminating in profuse perspiration. Tongue slightly furred; sleep disturbed; biliary secretion vitiated; stools frequent, exhibiting a frothy, yeast-like consistence, of varying and unnatural colour. An examination of the body discovered an enlarged and indurated state of the liver. The nervous organism was not materially affected, and the mental energies and spirits were unimpaired.

“A careful consideration of these symptoms led me to the conclusion, that the patient at that time laboured under an hepatic obstruction and chronic enlargement of the liver. The indications of treatment deduced from these morbid phenomena, were the reduction of the periodical febrile excitement, and the removal if possible of the hepatic obstruction and induration. These were attempted by external frictions and irritative applications over the region of the liver, and by mercurial remedies, &c. He was ordered three grains of calomel at bed-time, with a table-spoonful of the expressed juice of taraxacum on the following morning, to be taken every second night, and to use daily frictions of a wash, impregnated with resinous fumes upon the right hypochondrium, with mustard applications. During the febrile paroxysm he was directed to take forty drops of sp. nit. dulc. every two hours; and the occasional use of mustard sinapisms to the extremities. Diet abstemious, light, and of easy digestion. The pursuance of this treatment, slightly varied according to circumstances to the 13th of July, was attended with some advantage. The febrile paroxysm and night sweats ceased; the appetite was somewhat improved; the strength increased; the evacuations were more natural in appearance, but still

too frequent; and the enlargement of the liver remained unchanged. A cretaceous julep was now ordered in occasional doses as the state of the bowels required, and a seton recommended.

"It was at this date proposed to Mr. Miles by some of his friends to try a trip to the sea-shore, as his strength was improved. To this proposal, upon being consulted I consented, desiring him to continue the remedies during his visit, and to return immediately should it not agree with him.

"I did not see him again until about the 20th of August, when I received a visit from him at my house for the purpose of obtaining further advice. He seemed evidently benefited in appearance and strength. A continuance of the remedies was advised; substituting for the calomel, grs. iij. of mass. hydrarg. and the extr. taraxac. for the fresh juice. The seton was again recommended.

"With sentiments of the highest respect,

"I am, your friend,

"F. A. VANDYKE."

"*Hawthorn Cottage, Oct. 14th, 1833.*"

August 25th.—Mr. Miles had a renewal of his attack of hepatitis; a considerable tumefaction of the right side was apparent, attended with extreme pain. The ordinary depletory remedies were resorted to by Dr. THOMAS HARRIS, who, in consequence of my being from town, was kind enough to take charge of the patient. He was leeches on the side freely; a blister plaster was then applied, and the blistered surface kept open; it being dressed occasionally with morphia to diminish the intensity of the pain which shot down from the liver to the right iliac region. The administration of blue mass with morphia was also instituted; the mass being given to the amount of two grains daily.

On the 2d of September I resumed the charge of the patient, and continued with but little interruption the treatment which had been instituted by Dr. Harris. The descent of the liver below the right margin of the thorax, amounted at that time to three or four inches, and it formed a very conspicuous indurated swelling. About the twentieth day of the month, fluctuation was perceived, and became each day afterwards more distinct. Occasionally excruciating paroxysms of pain came on, which were generally relieved by an opiate. The patient in the meantime evidently declined in health, and became subject to exhausting perspirations. Under these circumstances we looked anxiously for the spontaneous evacuation of the abscess through some of the common routes for such matter, but being disappointed in this, the expediency of operating through the side was suggested, as it was clear that death must come in a short time without relief. The great objection to the operation was however ignorance of the fact, whether an adhesion had formed between the liver and the anterior side of the abdomen, and if this were not the case,

the unavoidable risk of opening the cavity of the peritoneum, and the probability of some of the matter of the abscess running into it and producing inflammation.

The case being in this unpromising condition in every view of it which could be taken; a choice of evils only was left, and with the consent of the family, and the advice and assistance of Dr. Harris, the operation was undertaken October 1st. An incision was first of all made horizontally on a line with the anterior end of the eighth rib on the right side, a little in front of its cartilage, and through the side of the abdomen, which brought the liver into view; the latter was seen to rise and fall with the diaphragm in respiration; moreover, a knife handle was introduced between the surface of the liver and of the contiguous part of the abdomen; these two facts made clear the thing apprehended, to wit, want of adhesion. In this dilemma I determined to stitch the liver to the side, which was accomplished with a large crooked needle, armed with a ligature of kid skin, and of bulk sufficient to fill up the hole made by the needle. One stitch was made in this way parallel with the upper margin of the incision at the distance of four lines from it, and another in the same manner below. The liver being thus fixed closely to the side, a trochar and canula were plunged into the abscess, and five gills of purulent matter were immediately discharged to the great relief of the patient; the matter continued to flow during the night, so that three or four more gills were discharged. The operation being ended, a bandage was put around the abdomen so as to keep its viscera as still as possible. The canula was left in for fifty-four hours, and then a piece of a flexible catheter was substituted. The abscess discharging all this time small quantities of pus and serum mixed.

On the second day the bowels became tympanitic, and there was hiccup, with cholicky pains. On the third day there was a manifest declension of strength, and it became evident that the previous exhaustion of the patient must render the operation nugatory. The symptoms of debility increased, and the patient died on the 5th inst. No sign of peritonitis followed this operation.

In twenty-two hours after death an examination was made. A recent adhesion between the liver and side had occurred immediately around the puncture of the trochar, and which along with the stitches had prevented any pus from getting into the cavity of the peritoneum. The latter membrane was entirely sound, and had no appearance of being irritated by the operation. The cavity of the abscess was collapsed very much, and contained shreds of coagulating lymph mixed with pus, amounting in all to about one gill; its parietes were lined

by a membrane. The right lobe of the liver being the seat of it, the anterior half was gone, but it appeared to be rather by pressure and absorption than by dissolution, as no remains of the liver were seen in the discharges. There was no preternatural adhesion of the liver to the parietes of the abdomen, excepting what was made by the operation. The left half of the stomach was destitute of mucous coat, it having been dissolved completely, so as to exhibit the cellular coat naked. Six inches of the beginning of the colon were studded with ulcers having red, injected, and elevated edges. The small intestines were sound.

Though life was not saved by this operation, evidently owing to the exhaustion of the patient at the time of its performance; I yet consider it as illustrating the fact, that hepatic abscess may be managed by opening it, even when adhesion to the side has not occurred; provided the liver be secured in the way described, or by an equivalent process; and after a deliberate review of the case, I only regret that I did not resort to this treatment when the abscess first fluctuated.

ART. VII. *Case in which Sand was voided by the Mouth, Rectum, Urethra, Nose, Ear, Side, and Umbilicus, and attended by various other Anomalous Symptoms.* By C. TICKNOR, M. D. of New York.

MISS LUCY PARSONS, of Egremont, Berkshire county, Massachusetts, when about eleven years of age received an injury, by the fall of a barrel across her loins, which was followed by exquisite pain, and an almost total loss of the power of locomotion. The pain after a time subsided, and the ability to walk gradually returned, though partial paralysis of the lower extremities, accompanied with severe pain, would almost invariably recur after much exercise. This state continued till about seven years after the receipt of the injury, when some portion of the surface was attacked with an erysipelatous inflammation, which, by metastasis, fixed itself upon the abdominal viscera. The patient now suffered excruciating pains, particularly of the right lumbar region, together with all the various symptoms of diseased stomach and bowels, was unable to walk, and mostly confined to her bed, till I saw her in the autumn of 1831, more than twenty years after the attack of erysipelas.

My brother first saw the patient in consultation with her attend-

92 Ticknor's Case in which Sand was voided by the Mouth, &c.

ing physician: he found her labouring under a profuse diarrhœa, which threatened a speedy termination to all her sufferings; food would pass in *ten minutes*, to all appearances precisely as it was taken into the stomach, without smell or change of colour. At this time a few grains of calomel put a stop to the diarrhœa, and the patient remained one hundred and nine days without any fecal evacuation *per rectum*. The most active cathartics had no other effect than to cause pain and irritation of the bowels, and a vomiting of their contents. An injection thrown into the rectum would be vomited in a few minutes, having the same appearance as when administered, and free from any admixture of feces. During this period of one hundred and nine days the patient experienced a regular vomiting each day of the food, properly digested, which she had taken the preceding twenty-four hours. About this time there was something of a peculiar appearance in the matter vomited, which, on washing, proved to be *sand*; and on examination it was found that sand was also discharged with the *urine*. The bowels resumed their office, and it now became the turn of the bladder to have its contents expelled by vomiting; the patient experienced a strong desire, without the ability, to pass the urine by the urethra, and on trying to introduce a catheter, the passage was found occupied by a hard substance, which rendered the operation impossible. The urine was now vomited for several days, though it occasionally passed *per rectum*, mingled with sand, till a quantity of sand stones, or lumps of concrete sand, were discharged from the urethra, when the urine again flowed through its proper channel.

The pain continued unceasing in the right side; a small abscess formed, which, being left to itself, opened and discharged, with a small quantity of pus, several lumps of sand; and in the efforts at vomiting, feces escaped through the same opening.

June 8th, 1832.—No fecal evacuation from stomach or bowels in *forty days*; has taken a great deal of cathartic medicine; vomited her urine; vomited injections in fifteen minutes after being administered, without the least appearance of any feces; appetite pretty good, though she takes but little food; tongue of an *inky* blackness, except the edges, which are *red*; complaining of excessive pain in right side and stomach; says she can feel lumps of sand moving inside; sand passes through the external opening in the side, mixed with blood, and sometimes feces; has had spasms of the muscles about the throat and jaws.

13th. Pain very great; jaws spasmodically closed; mouth filled with lumps of sand, several pieces passed out at the nose; saw her eat some bread and milk, and in a very few minutes it passed out at

the opening in the side; tried to introduce a probe into the orifice but could not succeed; could feel the sand in the side.

14th. Received a note from the patient's brother, saying that his sister this morning passed by stool, *at one sitting, forty-four lumps of sand.*

25th. The lumps of sand discharged on the 14th, vary from the size of the fore-finger to the first joint to that of a small pea; no fecal evacuation from stomach or bowels since last date; for the first time during her illness, she has since last visit vomited purulent matter, and voided it by stool.

July 19th.—Received the following account from the patient's sister of her state since last visit. On the 6th inst. her jaws became spasmodically closed; bowels for three succeeding days regular, since then no discharge per rectum; regular vomiting once a day of fecal matter, which is quite fluid, and escapes between the teeth; 8th, right ear began to bleed; 12th, discharged a watery fluid resembling urine *with sand.*

30th. An abscess opened just above the symphysis pubis, and discharged a small quantity of pus, afterwards *urine mixed with sand*, which continued for a week. Present symptoms—appetite pretty good; takes liquids, which she sucks between her teeth; jaws being yet firmly closed; vomits feces every day, the fluid part escapes between the teeth, and the more solid part is again swallowed; has lumps of sand in her mouth, which have been there *eleven days*; a dose of tartar emetic caused a little relaxation, and the mouth was emptied; at this visit I saw her vomit her urine, one gill, perfectly transparent, as if just passed by the urethra; saw a tea-spoonful of fluid discharged from the ear with sand, and a lump of sand from the nose; sleeps little; suffers exquisite pain; another abscess seems to be forming in the right side; more emaciated than I have seen her at any period of her illness.

August 1st.—Jaws yet closed; vomits, or passes by stool every few minutes, a whey-like fluid; retains *very little* food; since last visit voided by stool at once a table-spoonful of sand with a tea-cupful of pus, and soon afterwards there was discharged in the same way a membrane-like substance, of the size of a crown-piece, containing a number of fine, delicate hairs; there is voided now sand and urine by the mouth, rectum, urethra, nose, ear, side, and umbilicus! Treatment—Nit. argent. grs. x., op. xv., ft. pil. xx., one every fourth hour; foment abdomen, side, and throat, with decoction of cicuta.

13th. Symptoms of same character, though much mitigated in violence. Continue the same treatment.

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September 1st.—No diarrhœa; some vomiting; pain of left side; no discharge of sand since last date; deaf with right ear; vomits urine occasionally; for two weeks has been troubled with spasms resembling epilepsy, has twenty or more in a day, is warned of their approach by pain in the epigastric region; left leg strongly flexed upon the thigh, heel drawn up and lying upon the glutei muscles, and has been so for twelve days; appetite good, but most of the food is rejected soon after eating. Take the following pill every fourth hour—Ext. hyosciami, grs. iij., castor, grs. ij., nit. argenti, gr. i.; laud. and ext. cicuta between the pills in quantities sufficient to procure sleep or quiet; foment spine, side, and epigastrium, with decoct. cicuta.

10th.—No spasms since last date till to-day; omitted the pills yesterday, and to-day the spasms returned; no natural evacuation from bowels or bladder since 20th July; contents of both are vomited; appetite tolerable; has ridden out several times since last visit; left leg continues flexed. Treatment, the same.

October, 1833.—Have not seen the patient for more than a year: her sister gives the following account of her condition during that interval. Her bowels soon became quite regular, and so continued for some time, then relapsed into their former obstinately costive state, when their contents have been vomited; appetite has been generally good; left leg during the whole time has continued flexed, and attempts to extend it have invariably caused frightful spasms; has ridden out frequently, done a good deal of needle work, and may be said to enjoy comparatively good health. I ought to add, that during the whole illness of this patient her catamenial evacuations have been generally regular, though at times rather profuse.

A lump of sand discharged from the bowels, which Dr. TORREY and Dr. C. A. LEE, of this city, had the kindness to analyze for me, proved to consist of silex and lime, and a few *short hairs*; the former making much the greater proportion. Professor AVERILL, of Schenectady, did me the same favour, with the same result.

Most of the facts related in the above case, besides being witnessed by my brother, Dr. L. TICKNOR, of Salisbury, Conn. and myself, can be vouched for by the following gentlemen. Dr. BOLTON, of Egremont, Dr. KELLOGG, of Sheffield, Dr. WHEELER, of Great Barrington, Professor AVERILL, of Union College, Drs. CLEVELAND and FLALLENBECK, and Mr. OLIVER WHITTLESEY, of this city.

The interesting features of this case will readily suggest themselves to the mind of every reader. It furnishes an extraordinary example of the amount of disease the system can sustain when nature is playing her wildest freaks.

In regard to the imposition which the patient practised, or at least *might* have practised, I may state that she has sustained a character for genuine piety, and to have lived with her two maiden sisters who have had the sole care of her for more than twenty years; they had a small estate, which, with frugality, would support them all, and there can be no reason why she or her sisters should wish to deceive. I have hesitated about publishing the case, but I believe it a duty I owe to my profession not to withhold the facts, however they may be accounted for, or however little they may be believed. I have thought best to give the facts and the facts only—the patient is still living about fifteen miles from where my brother is practising, and he may yet detect her in her imposition if she is not put upon the look out by publishing speculations prematurely. Can these phenomena be accounted for without calling the aid of imposition?

No. 369, Hudson street, New York, Dec. 31st, 1833.

ART. VIII. *Case of Purpura Hæmorrhagica*. By SAMUEL JACKSON, M. D. Assistant to the Professor of the Institutes and Practice of Medicine in the University of Pennsylvania.

PURPURA is a disease that occasionally presents itself to the observation of practitioners, though not of frequent occurrence. Its pathology is involved in great obscurity. No hypothesis yet suggested can be adopted, as cases are to be met with that contradict in their facts the presumed solutions of the pathological problem.

The disease belongs apparently to the hæmorrhages, but the proximate cause of the hæmorrhage has as yet resisted all scrutiny that is satisfactory. It assumes two forms—the simple, when a drop of blood exudes beneath the cuticle, the serous or fibrous membranes, or in the parenchyma of the organs. These are intermingled with vibices and ecchymoses. In the second form, along with the preceding circumstances, there is effusion of blood from some portions of the mucous membranes, and occasionally from the skin. The first affection is generally, if not always curable; the last is often fatal. Both occur in individuals of dissimilar constitutions, temperaments, habits and conditions of life.

Phœbe M'Gonagle, aged forty-seven, had been an inmate of the Alms-house for the last two years, most of which time she had

passed in women's medical ward, and in bed; her complaint being chronic rheumatism, for which only a palliative treatment had been pursued. Her gums had been in a diseased state for a year, but never discharged blood. To the best of her knowledge, she was never salivated. During most of her stay in the house, she has been on good diet, with a portion of wine daily. About the third week in December, 1833, she commenced to discharge blood from the mouth, and passed in twenty-four hours nearly, if not entirely, a half a pint. She complained of pain in the chest and nausea, cough, and apparently expectoration of blood. Ecchymosis followed the application of cups to the chest, and the following day purple spots appeared on the arms. The pulse was feeble and frequent. A gargle of sulph. zinci, and a strong infusion of pulv. gallæ were directed, and to procure sleep, which the patient could not before obtain, opium was given at bed-time. The patient was greatly depressed in spirits, and was getting worse. At this time I saw the patient, and directed, R. Tartrat. ferri, ℥j., aqua, ℥iv. Half a table-spoonful four times a day. Also, R. Nitro-muriatic acid, ℥j., aqua, ℥iv., honey, ℥i. Tea-spoonful every hour. The stomach could not retain the remedies, and they were discontinued. I then substituted, as a gargle, Dipple's animal oil, gtt. ij., aqua, ℥iv. During the last twelve hours the patient has discharged nearly a pint of blood from the mouth, and a small quantity from the vagina. The blood coagulates about the gums. A nutritious diet is allowed her, but she has little relish for any thing.

January 2d, 1834.—Spots of purpura on every portion of the body; large patches of effused blood in the mucous membrane of the mouth; the body was sponged frequently with the following:—R. Chlor. sodæ, ℥j., aqua, ℥vj.

3d. Not much amendment. Patient complains of intense pain in the epigastrium. Discharges of blood from the bowels; pulse very feeble. A blister was applied for one hour to the epigastrium, and ol. terebinth. gtt. iij. administered every hour.

4th. She is very feeble. Skin sallow, and covered with purpura and ecchymosed spots. Her stomach revolts against the turpentine, and indeed every thing excepting wine whey. Directed R. Cal. grs. ij., pulv. rhei, grs. vj. every four hours, and an injection of salts and senna. The hæmorrhage from the bowels the succeeding day was nearly suspended; on the 5th it returned. The best of diet, as essence of beef, oysters, and eggs was allowed her; brandy, with tinct. rhatany were exhibited to sustain her forces, and arrest the hæmor-

rhage. But every thing proved fruitless, and at 3 P. M. of January 7th, she expired, the blood continuing to the last to issue from the gums, and to be discharged from the bowels and vagina.

Post mortem appearances, January, 9th, 1834.—Emaciation not very great; skin generally sallow; purple and scarlet spots upon the skin of the eyelids, about the nostrils, around the mouth, upon the upper and lower extremities and body; these spots varied in size from a pin's point to that of a sixpence. In some places, especially upon the anterior surface of the thighs, there were ecchymosed spaces and streaks of discoloration, two or three inches in extent. Several of the small spots were covered with dried coagulated blood, that had oozed from the pores. Thorax; adhesions strong between the pleura pulmonalis and costalis; left lung exhibited the vesicular emphysema, otherwise this lung was healthy. The apex of the right lung filled with immature tubercles; one inch from this there was a mass, of the size of a hazel-nut, of tubercles in the same condition; also at the root of this lung there were half a dozen small tubercles, which were blackish externally, white and hardened internally; in a portion of the upper lobe was also vesicular emphysema, while the lower lobe was free from it. Heart; some few purpura were upon the inner surface of the pericardium, also upon the fat upon the posterior portion of the heart. The muscular part of the right auricle was infiltrated with blood of a scarlet hue; the remaining portions of the heart natural; lining membrane natural aspect. A purpuric spot of a bright red colour was on the inside of the epiglottis, another extended from one arytenoid cartilage to the other; three inches below this there was a patch of a deep bluish colour; the mucous membrane of the œsophagus was upwards of four times its natural thickness, and its density throughout its extent augmented; in colour it was of a deep port-wine red, approaching to black; it was also covered with an adventitious membrane, which was in a state of incipient putrefaction. The surrounding cellular membrane was injected with blood, which at first was black, but upon exposure, it changed into a florid colour, proving the blood to be susceptible of atmospheric influence. A superabundance of fat was found in the greater omentum. Stomach; its villous coat was covered with a gelatinous, greenish mucus; beneath this it was injected with blood of a bright hue; consistency natural. The duodenum and upper portion of the bowels were nearly filled with thick yellow mucus; the lower part of the ileum contained it of a dark brownish-red. A thick, tenacious, tarry-like substance was found in the lower part of the colon and in the rectum. The cœcum after washing showed its inner surface

much discoloured; four inches from the caput coli there were many dark enlarged mucous glands, varying from one-eighth to one-half an inch in length, and covered with coagulable lymph; this patch of tumours was four inches in extent; then succeeded a large ragged ulcer, with an indurated base; below this the colon was discoloured with livid spots for five inches. The tumours again commenced, and continued for eighteen inches. Lower down, the mucous membrane was merely discoloured with a darkish hue; several ulcerations were found about the ileo-colic valves. Kidneys; the right one externally resembled the spleen in appearance; its structure was injected. Left kidney; its pelvis and calices filled with dark soft coagula; the ureter enlarged, and the upper portion highly injected. Pancreas very hard, and contained caseous matter. Uterus; its membrane very white; the upper cavity contained albuminous fluid; several purpura around the neck and upon the vulva. Cranium; several purpura beneath the scalp. Brain; considerable effusion of blood beneath the dura mater; blood partly coagulated; congestion of florid blood along the course of the longitudinal sinus. Structure of the brain softened.

Observations.—For the above account of the case and autopsy I am indebted to Dr. PORTER, resident physician to the Alms-house. The patient of the above case was of broken down constitution, having long suffered under disease, and it might be presumed that this was the predisposing cause of the purpura. It however occurs in individuals in the enjoyment of robust and vigorous constitutions, and the affection cannot therefore be regarded, in a positive manner, as proceeding from that cause.

So far as the general properties of the blood are indicative of a sound condition of that fluid, it manifested a healthy state. It coagulated in the mouth and on the gums, as rapidly as it was effused. It was found coagulated in the body. Exposed to the air it rapidly assumed the scarlet hue, showing the preservation of its natural relations to the air. It is not then probable that the blood was materially changed in its condition, and the cause of purpura cannot be looked for in a diseased state of this fluid.

In examining attentively the spots of purpura and the ecchymosis by dividing through the tissues, I could not discover any appearance of a coagulum, indicating an effusion or extravasation of the blood. It appeared much more to resemble a circumscribed collection of blood in the minute capillaries or areolar texture. Can the disease be connected with the capillary circulation?

In this patient the general circulation was exceedingly feeble—the pulse scarcely perceptible. An inordinate force of the action of the heart was not in this case the cause of the hæmorrhage and purpuric

maculæ, though such a conjecture has been made in explanation of their production.

The œsophagus and alimentary canal exhibited the evidences of prolonged disease. The œsophagus was more especially the subject of pathological derangement. Its mucous membrane was hypertrophied, indurated, and nearly black. The cellular tissue below it in the same state. Its surface was lined with an ancient exudation of lymph, which had fallen into a state of putrid, semifluid sanies. This condition of the œsophagus will account for the difficulty the patient experienced in taking aliment and the remedies prescribed. It was impossible to sustain her forces.

This case, though it exhibits chronic structural disorder sufficient to account for the general loss of health, the exhaustion and feebleness of the patient, prior to the attack of purpura, throws no light on the specific pathology of that disease.

ART. IX. *Cerebral Affections of Children.* By W. W. GERHARD, M. D. (Second part.)

IN the first part of this essay I published the details of ten cases of the cerebral affections of children; it was my original intention to have enlarged the series by annexing such cases as I had subsequently collected at the Children's Hospital of Paris. It would I find be incompatible with the limits of the journal to give so great an extension to a single article; I shall therefore confine myself to the cases already detailed, as the proofs of the deductions at which I may arrive; these observations, in common with others which I have not published, will form the materials of the second part of the essay.

The anatomical lesions constitute the distinctive characters of the three classes into which I divided the cerebral affections of children. The first class included such cases as offered an evident lesion of the brain, or its membranes, without the presence of tuberculous or other accidental tissue; this class is by no means so distinct as I had at first thought; the autopsies prove that the appearances in all the ten cases either possessed the evident characters of tuberculous matter, or approached them so nearly as to render it impossible to indicate the precise line of demarcation. The cases were selected from such as were least clearly dependent upon the deposit of tuberculous matter in the brain or its meninges, and therefore lead us to suspect a

fact which will be presently more fully developed; that is, the close connexion, if not identity, of one form of cerebral disease with the tuberculous affections. The classification which was legitimately assumed for the convenience of study, should therefore be modified, and the first division will include all evident alterations of the brain or its membranes, whether these alterations be connected with the presence of tubercles or tuberculous granulations, or without evidence of the existence of any accidental tissue. The second class includes cases in which the presence of one of the accidental tissues, other than the tuberculous, was detected; it includes but two cases, one in which a cerebriiform or encephaloid tumour was found immediately beneath the junction of the optic nerves, and another which presented a fungoid tumour in the posterior part of one of the lateral ventricles.* The third class will not be modified, but will still include such cases as presented no evidence of alteration of the brain or the meninges.

The most important fact to which this series of observations has led, is the proof of the connexion of the cases included in the first class with the tuberculous affections. It was long since remarked, that many children who had died of a cerebral disease, were of a scrofulous temperament, but it was impossible either to confirm this remark, or to point out the cases to which it should be limited, without the aid of pathological anatomy. The obscurity which exists in the application of the terms acute hydrocephalus, or according to M. GUERSENT, meningitis, has led to the extreme diversity of opinion amongst physicians as to the mortality and possible cure of this disease; with the greater perfection of diagnosis a more exact appreciation of therapeutic means becomes practicable, and the singular discrepancy of opinion which prevails in the treatment of hydrocephalus may be readily explained.

The tables which follow, contain in one column the name, age, and sex of the children; under the same head the organs which contain either tubercles† or grayish semi-transparent granulations are noticed. The lesions of the pia mater are mentioned in the second column, which characterizes the affection. Another column contains the quantity of liquid found in the ventricles, and the fourth, the state of the cerebral substance. The tabular form will greatly facilitate the deductions.

* This specimen I presented to the *Société Anatomique* of Paris; a notice of it will be found in the first or second bulletin for 1834. (*Archives Générales de Médecine.*)

† The term tubercle is used in the generally received signification, that is, a rounded or amorphous substance, yellowish, hard, and with a dull, uniform surface if cut.

	<i>Pia Mater.</i>	<i>Ventricles.</i>	<i>Cerebral Substance.</i>
1. <i>Rebours</i> , male, æt. 6. Tubercles in bronchial glands and spleen.	Infiltration of yellowish, concrete, tough substance into the pia mater around the optic nerves.	Three ounces of limpid serosity.	Firm.
2. <i>Deucar</i> , male, æt. 11. Scrofulous abscesses on limbs; bronchial glands cretaceous.	Yellowish substance in the fissures of Sylvius and around the optic nerves. Slight yellow infiltration on the convex surface.	Two or three teaspoonfuls of limpid serum.	Softening of central portions. Injection moderate.
3. —, male, æt. 15. Tubercles in pleura and bronchial glands; gray semi-transparent granulations through both lungs.	Yellow opaque matter around the optic nerves, and in the fissure of Sylvius.	Two ounces of clear serosity.	Firm; natural colour.
4. <i>Erlemont</i> , female, æt. 5. Tubercles in left lung and bronchial glands. Caries of foot.	Slight thickening around the optic nerves, and hard semi-transparent granulations in each fissure of Sylvius.	Three drachms of limpid serum.	Septum lucidum, and fornix soft. In general firm, and moderately injected.
5. <i>Jeannette</i> , female, æt. 2. Bronchial glands tuberculous.	Gray granulations on convex surface of the arachnoid. Concrete whitish substance in both fissures of Sylvius and around optic nerves, containing some hard whitish granulations.	An ounce to two ounces of milky serosity.	Firm; not injected.
6. <i>Bellavoine</i> , male, æt. 6. Tubercles and granulations in both lungs, liver, and mesenteric glands. Bronchial glands?	Opacity in fissures of Sylvius, with gray semi-transparent granulations.		Firm; not injected.
7. <i>Trehlue</i> , male, æt. 6. Opaque tubercles in each lung; cavity in the right. Bronchial glands tuberculous. Peritoneum, liver, and spleen tuberculous.	Tubercle in the left hemisphere. Greenish tough substance with granulations in fissures, and at the base of the brain generally. Other granulations on upper part of right hemisphere.	An ounce of limpid serum.	Substance of brain firm, except around a tubercle.
8. <i>Margotin</i> , female, æt. 8. Tubercles and cavity in right lung; granulations in left; bronchial glands tuberculous; ulcerations in small intestine.	Yellowish-white granulations in left fissure of Sylvius.	One to two drachms of serosity.	Not softened.
9. <i>Landras</i> , female, æt. 6. Bronchial glands contain cretaceous matter. Tubercle in cerebellum.	Milky aspect of the arachnoid at the base. No granulations.	Three ounces of limpid serosity.	Firm; pale.
10. <i>Fortin</i> , male, æt. 4. Tuberculous granulations in right pleura.	Opacity and thickening around the base of the optic nerves. Yellow opaque patch on the upper part of the cerebellum.	Greatly distended, perhaps six ounces of limpid serosity.	Not injected; slight softening of the central parts.
11. <i>Mayen</i> , male, æt. 13. Gangrenous cavities in the right lung. No tubercles formed.	Yellowish hard granulations upon the convex surface of the hemispheres and at the base, along the vessels.	Not distended.	Firm; a little injected.

	<i>Pia Mater.</i>	<i>Ventricles.</i>	<i>Cerebral substance.</i>
12. <i>Camier</i> , male, æt. 6.	Thickening of the arachnoid at the base, around the fissure of Sylvius.	Much distended by serosity.	Central portion softened.
13. <i>Vernet</i> , female, æt. 14. Both lungs filled with very numerous gray granulations. Tubercles in bronchial glands, kidney, and small intestine.	Yellowish substance on each side of the median line, same substance at the base around the optic nerves, and in the fissures of Sylvius. Hard granulations upon the whole convex surface of the hemispheres.	Contain a drachm of troubled serosity.	Central parts and walls of the ventricles in general diffused.
14. <i>Poupart</i> , female, æt. 6. Cavities and crude tubercles in left lung. In right, numerous tubercles and granulations. Bronchial and mesenteric glands tuberculous.	Tubercles on the upper part of right hemisphere, with gray granulations on each side of the median line. Fissures of Sylvius filled with concrete matter containing gray granulations.	An ounce of troubled serosity.	Softening around the tubercles.
15. <i>Dehaut</i> , female, æt. 4. Lungs contain tubercles. Bronchial and mesenteric glands tuberculous.	Tuberculous infiltration and gray granulations on upper part of left hemisphere. Fissures of Sylvius filled with granulations.		Softening around the tubercles, and of the posterior part of left hemisphere.
16. <i>Pachon</i> , female, æt. 5. Caverns, tubercles, and gray granulations in both lungs. Bronchial and mesenteric glands, spleen tuberculous.	Large tubercle in the inferior part of right hemisphere. Tubercles in the pia mater, and granulations in the fissures of Sylvius.	A drachm of serosity.	Softened in the fissures.
17. <i>Blondel</i> , male, æt. 2. Cavern in lower lobe of right lung; tubercles and gray granulations in both lungs. Spleen, bronchial and mesenteric glands tuberculous.	Two tubercles attached to the cerebellum. Thickening and numerous granulations in the pia mater of the base.	Two drachms of serosity.	Softened at the centre and around the tubercles.
18. <i>Terard</i> , male, æt. 7. Lungs and pleuræ filled with numerous tubercles. Ganglia tuberculous.	Tuberculous masses on each side of the median line. Granulations in the fissures of Sylvius.	Two drachms of serosity.	Parietes of ventricles and cortical substance in contact with the tubercles much softened.
19. <i>Sances</i> , female, æt. 6. Very numerous granulations throughout both lungs. Bronchial glands tuberculous.	Granulations and patches of yellow substance on both sides of median line beneath the arachnoid. Base of the brain including fissures of Sylvius covered by yellowish substance.	Two ounces of serosity in ventricles.	Not injected; central parts softened.
20. <i>Courtray</i> , female, æt. 7. Lungs contain tubercles and granulations. Bronchial and mesenteric glands tuberculous.	Yellow substance covering the central parts of the base, and the fissures of Sylvius; whitish hard granulations in this substance. Tubercle on the cerebellum.	Two to three ounces of serosity.	Not softened; nor injected.
21. <i>Delouche</i> , female, æt. 5. Lungs full of miliary tubercles. Mesenteric and bronchial glands tuberculous.	Tubercles on the summit of both hemispheres. Tubercles and granulations at the base of the brain.	Two or three ounces of serosity.	Central parts softened.
22. <i>Boudoux</i> , female, æt. 5. Cavity in right; tubercles in both. Bronchial glands tuberculous.	Granulations numerous on the convex surface. Yellow substance filled with the same granulations at the base.	Two ounces.	Cortical substance at the base flaccid, but without change of colour.

	<i>Pia Mater.</i>	<i>Ventricles.</i>	<i>Cerebral Substance.</i>
23. (16. <i>Stamne</i> ,) female, æt. 4. Tubercles in pleuræ. Cavities and numerous tubercles in lungs. Ulceration of larynx. Mesenteric and bronchial glands tuberculous.	Tuberculous mass on the right hemisphere, extending from the summit to the base.	An ounce of limpid serosity.	Walls of both ventricles much softened.
24. —, female, æt. 7. Tubercles in pleuræ; tubercles and cavities in lungs. Bronchial glands very tuberculous.	Semi-transparent granulations at the base, in the midst of a tenacious transparent substance which also contains a few opaque miliary tubercles.	An ounce of troubled serosity.	Parietes of ventricles much softened, including the central parts.
25. <i>Colas</i> , female, æt. 4. Tubercles in lungs and pleuræ. Ganglia, spleen, and liver tuberculous	Yellow substance in the fissures of Sylvius.	An ounce of limpid serosity.	Firm.
26. <i>Noireau</i> , male, æt. 4. Numerous granulations in lungs, pleuræ, and peritoneum.	Layer of yellow substance interspersed with granulations, covering the whole base of the brain.	Three ounces of serosity.	Cortical substance of the fissures of Sylvius softened and injected.
27. <i>Benard</i> , male, æt. 7. Numerous tubercles in both lungs and pleuræ. Tubercles in ganglia, spleen, peritoneum, and kidneys.	Granulations and miliary tubercles in the fissures of Sylvius and cerebellum, and to a less degree on the convex surface of the brain.	Five ounces of transparent serosity.	Firm; not injected.
28. <i>Kiffer</i> , male, æt. 4. Tubercles in left lung, bronchial and mesenteric glands.	Granulations on the convex surface of the hemispheres and in the fissures of Sylvius, without concrete substance. Tubercle in the cerebellum.	Two ounces of reddish serum.	Cerebral substance a little injected, but firm.
29. <i>Lamiral</i> , female, æt. 7. Viscera not noted.	Opaque miliary tubercles on the convex surface of the brain. Granulations in the fissures, and tubercles of the size of peas adhering to the pia mater.	Half an ounce of serosity.	Central parts not softened.
30. <i>Pincon</i> , female, æt. 10. Bronchial glands and spleen tuberculous, other viscera not noted.	Opaque hard substance around the optic nerves. Granulations on the right hemisphere and the cerebellum.	An ounce of serum.	Firm and pale.

I am indebted to my friend M. RUFZ for the last six cases of the thirty which are analyzed in the preceding table. I am in possession of two other cases which form part of the same series; one is relative to a child three years old, and the other to one seven years of age; both girls. In each case the yellow opaque substance so often mentioned was found at the base of the brain, with semi-opaque granulations adhering to the arachnoid; in both subjects tubercles existed in several viscera, and in the elder, the arachnoid, pleura and peritoneum were nearly covered by numerous gray granulations. The whole series includes, therefore, thirty-two observations; that is, all the cases which had been regarded as examples of the affection known under the names of hydrocephalus acutus and meningitis, and which had offered on dissection a lesion of the cerebral organs or membranes.

It will be seen that all the subjects, with the exception of Nos. 11 and 12, presented tubercles in other organs than the brain. In case 11, gangrenous cavities were found in the lungs, but no acute tubercles were discovered, so that the origin of these cavities is of course doubtful; but the existence of perfectly characterized miliary tubercles in the membranes of the brain proves that the case belongs to the same class as the other observations. I was not present at the examination of the case No. 12; I was indebted for a note of the autopsy to a friend who omitted to examine all the organs with care.

In every case analyzed, there was evidence of the existence of tubercles in one or more organs; the subjects were therefore all tuberculous, that is, offered the circumstances necessary for the formation of tuberculous matter; this disposition to the general production of tubercles occurred in no other disease which I observed, than that now investigated, and phthisis or evident tuberculization. The substance formed beneath the arachnoid was in many cases evidently tuberculous, consisting of round, hard, semi-transparent or opaque yellowish bodies, which presented the usual characters of tuberculous matter; in other cases these granulations were interspersed throughout by a homogeneous, semi-transparent, gelatinous matter. This disposition of the tuberculous granulations, closely resembles the appearance of a lung infiltrated with tuberculous matter, through which miliary tubercles are disseminated. Another form of the morbid production is, that of a yellow tough substance of consistence and aspect intermediary between fibrine and tuberculous matter, or not unlike concrete pus. It is difficult to ascertain the precise nature of this substance; in several of the subjects I have lately examined, I subjected small portions to microscopical examination, and distinctly recognised two distinct parts, that is, semi-transparent granular bodies in the midst of an amorphous matter. Whether the same distinction of the two substances exists in all cases, is yet to be decided.

The table indicates the quantity and characters of the serosity found in the ventricles; it is evident that the effusion of serum is variable in quantity, and far from constituting the necessary character of the disease.

The cerebral substance was sometimes softened, at others it retained a perfectly natural aspect; the rigidity of the muscles was by no means confined to the subject which presented the softening of the brain. Case No. 3 is an example in point.

The question whether this affection is of an inflammatory nature, excited formerly great interest. M. Guersent was of opinion that it

consisted in an inflammation of the membranes. M. SENN adopted this view. M. CHARPENTIER, who had also observed it at the Children's Hospital of Paris, called it a meningo-cephalitis. I have reason to believe that M. Guersent, to whom the coincidence of tubercles with this disease had been shown, has now modified his former opinions. The cases which I have detailed, induce me to regard this form of cerebral affections as closely analogous to the deposition of tuberculous matter in other organs. M. RUFZ, who prosecuted his examinations in a separate service of the hospital, and examined with care all the organs of the children who died while under his observation during the last nine or ten months of the past year, (1833,) agrees with me in regarding the weight of evidence as decidedly in favour of the tuberculous nature of the affection. Those who may think the evidence sufficiently strong, may adopt this inference without agitating the question of the inflammatory or non-inflammatory nature of the disease. It will then in fact be placed upon the same footing as the formation of tubercles in other parts of the body, and such as are still disposed to regard tuberculous matter as one of the products of inflammation in the one case will be at liberty to extend the theory to the other. The existence of tubercles does not explain the cause of death; they constitute simply the anatomical character of the disease; the morbid actions which precede the anatomical lesions are probably not always in direct proportion to their effects. Thus, the case of Mayen presented only a few round tuberculous granulations in the pia mater, yet we can draw from it no direct inference as to the intensity of the disease during life.

Next to the development of tuberculous matter, the anatomical phenomenon of greatest interest is the lesion of the mucous membrane of the stomach. Of the ten cases detailed, six presented an unequivocal alteration of this organ.* Of the other cases not detailed, about four-fifths offered a lesion of the stomach. The alteration of the mucous coat was sometimes limited to a simple thinning, more rarely it was thickened, in other cases it was mamillated. In some subjects the thinning of the membrane was very great, but it was nearly limited to the great tuberosity and disposed by bands, generally longitudinal, but sometimes united by transverse lines; these bands contrast by their bluish tint with the surrounding membrane. The thinness in

* We mean by unequivocal lesion an alteration of thickness or consistence, or other apparent change of structure; livid punctuated redness may also be regarded as a lesion, but the lighter degrees of injection, or the general redness of imbibition, constitute doubtful evidence of inflammation.

bands of the mucous membrane seems an undoubted lesion; the gelatinous softening may be an appearance produced after death, at least the question is still doubtful. The thinning of the mucous membrane is not peculiar to this affection; it occurs in many other diseases, especially the tuberculous; but some years since, when the physiological doctrine engrossed so much attention, the alteration of the stomach was looked upon as a proof of the gastric origin of meningitis.

Symptoms.—One of the first and most constant symptoms was *vomiting*; of the ten cases which I published in the preceding number of the journal, eight offered this symptom at the commencement, or during the first days of the affection. In two it was stated not to have occurred, but the parents of one of the children were possessed of too little intelligence to render the information received at all certain. Of four cases, (not published,) in which some details could be obtained respecting the same symptom, three were accompanied by vomiting. The inference is clear, that vomiting forms one of the first symptoms in a large majority of patients affected with this form of disease.

Cephalalgia.—This symptom existed in all the cases in which sufficient data could be obtained to ascertain its presence or absence. The cephalalgia usually continued until succeeded by delirium or coma.

Constipation.—Immediately after the vomiting and cephalalgia, the dejections either cease or become extremely rare. Case No. 2 offers the only apparent exception. Stools may sometimes be produced by the action of a cathartic, but with difficulty; they were not followed by a notable diminution of the symptoms.

Delirium.—A noisy, violent delirium is very rare in this affection. Nos. 1 and 3 of the cases published are the only instances of it which I have witnessed. The low muttering delirium is frequent; I have myself ascertained its existence some days previously to the termination of the affection, in nearly one-half of the cases which were admitted. The absence of muttering delirium in a number of cases could not be satisfactorily established, in consequence of the necessity of relying upon the reports of the attendants of the sick. Moans, or low plaintive cries of the kind first noticed by M. COINDET of Geneva, are frequent in the affection when the coma becomes very profound; they are however by no means characteristic of the disease. The movement of the lower jaw, (*machonnement*,) exists in a large number of cases; it is usually observed at the same time with the low plaintive cries.

Convulsive movements of one or more muscles were detected in nearly one-half of the cases, (five in twelve,) which were examined

on this point. The absence of this symptom cannot be affirmed with entire accuracy, unless the child had been much more closely observed than is practicable in a large hospital. The spasmodic movements occurred in the earlier or second stages of the disease.

Lesions of the organs of movement.—These were an increased and permanent contraction of the muscles; or secondly, perfect or imperfect paralysis. Of the ten cases published, but one, No. 7, offered no evidence of permanent contraction of the muscles of either the face or limbs. Of the other cases, Nos. 1, 5, and 10, presented but slight traces of rigidity; in all of these cases the quantity of serosity in the ventricles was remarkably great. Of the cases not published, two only offered no distinctly marked contraction of the muscles; in these the same abundance of serum in the ventricles was observed. The great secretion of serum seems therefore to coincide with the absence of the muscular contraction observed in the large majority of cases. The degree of anormal contraction is very various, in some patients it is observed in the slight distortion of the features without paralysis, in others there is a little rigidity of the muscles of the neck, and in the more marked cases, strong contraction of the muscles, always more distinct in the upper than in the lower extremities, and generally more evident on one side of the body than on the other, without being strictly limited to either.

The rigidity of the muscles is most easily discovered at the elbow, but care must be taken not to mistake the voluntary resistance of the muscles caused by the annoyance of the child for the permanent involuntary stiffness. At first this distinction is hardly to be made, except by a careful comparison of both sides of the body. In some cases the contraction of the muscles is so marked that the limbs are in a state of permanent flexion, which can only be overcome by a strong effort.

Paralysis existed in none of the ten cases published, but the power of voluntary motion was greatly *diminished* in all. Perfect paralysis did not occur unless immediately before death. *The sensibility* at first is almost invariably augmented, the increased susceptibility to impressions is not confined to the muscular system, the senses are more acute, bright light and loud sounds are both evidently painful; the same increased susceptibility is betrayed by an aversion to questions and impatience of the least disturbance. The sensibility invariably diminished as the symptoms became more intense, and in some cases, (three and five for example,) it was extremely obtuse. The loss of sensibility coincides with the rigidity, unless one side of the body be in a state of nearly perfect paralysis.

Senses.—The pupils were generally dilated; thus, of the ten cases, in but one were they more contracted than usual, in two others there was neither evident contraction nor dilatation. Of the other cases none are noted as presenting the anormal contraction of the pupils; rather more than half the number offered an evident dilatation. Strabismus existed in a majority of the cases. Loss of sight occurred but rarely. The hearing was acute, even more so than in the natural state in the patients who entered the hospital in the earlier periods of the disease; it afterwards became extremely obtuse.

The intelligence at first offered no deviation from the natural state, except the increase of vivacity and greater petulance of the child; but it gradually became dull, and at the same time confused; this state was replaced by delirium or stupor. Complete coma existed in many cases before death. The stupor was not unfrequently much diminished during the course of the disease, sometimes to so great a degree that the child could understand and answer correctly the questions proposed to it; this remission is by no means a favourable sign.

The symptoms detailed are those of greatest interest in this affection, the patients were examined in relation to several other points, but they are scarcely of sufficient moment to render an analysis absolutely necessary; except of the state of the pulse and the respiration. The pulse it will be seen was slow, 70, 80, or 90 at first, and through the whole disease until near the termination, when it became much more rapid; the slowness of the pulse was found in all the cases which were admitted some days before death; the augmentation in the number of the pulsations was almost constant, there was but one exception, (No. 2,) amongst those which I examined. The respiration was at first irregular, neither slow nor much increased in frequency, but accompanied with a peculiar sigh in the expiration; towards the close it became stertorous, more frequent and much more elevated.

In concluding the sketch of the symptoms the countenance should not be forgotten; as in this affection it is so peculiar, that the sister of one of the wards at the Children's Hospital was accustomed to distinguish the disease with much accuracy from the mere aspect of the child. The face is pale, with occasional flushes of redness on one or both cheeks; mouth frequently a little deviated; lips compressed, or half open; the eyelids are almost invariably closed, or a little separated; nostrils widely dilated. But the most distinctive character is the peculiar listless expression, with occasional grimaces and movements of the lips, as if tasting an article of food; this character does not admit of description, it must be seen to be appreciated.

Diagnosis.—The disease just described is often confounded with certain cerebral symptoms, such as convulsions, which are the attendants of affections other than the tuberculous, or produced by some accidental cause; hence arises the mistake of M. Charpentier, who has evidently compared this fatal disease which he had observed at the childrens hospital with different affections which he witnessed in private practice; the mortality was necessarily very different in the two classes. Can the diagnosis be satisfactorily established? I do not venture to think so, the question is so difficult that it would be presumptuous to resolve it hastily. With the existing facts, we may however attain a greater precision than could have been reached without the aid of pathological anatomy.

I have met with but few diseases resembling this form of cerebral affection, these are—1st, the typhoid or nervous fever of Paris; 2d, the development of an encephaloid mass at the base of the brain; 3d, tubercles in the cortical substance without evident disease of the membranes; 4th, a form of disease which presents closely analogous symptoms, but in which I could discover no decided traces of cerebral lesion; and 5th, the anomalous symptoms which are often confounded with this affection.

The typhoid fever may be readily recognised from the existence of diarrhœa, tympanitis, petechiæ, sibilant rhonchus, and decided febrile pulse. None of these symptoms are met with in the ordinary forms of the cerebral affections. The peculiar alteration of the functions of the nervous system is another distinctive mark.

The encephaloid tumour which I found at the base of the brain in one subject, could only be confounded in symptoms with the isolated tubercles in the cerebral substance, its chronic duration was sufficient to distinguish it from the affection of the membranes.

Tubercles are sometimes found imbedded in the cortical substance of the cerebrum, and more frequently cerebellum, without the existence of any peculiar symptom during life. In other cases the tubercles are larger or more numerous, and then give rise to distinct symptoms, such as partial paralysis and rigidity of the muscles; these cases may be distinguished by their chronic nature, by the gradual diminution of the intelligence and progressive increase of the symptoms. I have collected two observations of this variety, which it is not necessary at present to publish. The fourth variety is probably but a form of the disease described in the observations; the child was tuberculous, and the symptoms were nearly similar to those observed

in other patients. The apparent severity was however so much less than in the other cases, that strong hopes were entertained of the child's recovery. Was this case an example of the disease before the secretion of the morbid substance?

The last form of disease which is confounded with the tuberculous meningitis, is the various complications supervening during the course of other affections, especially of the alimentary canal. The last variety is in many instances within the controul of treatment, and by no means subject to the same laws as the tuberculous disease. The diagnosis is difficult, but the cases which I have witnessed at the Children's Hospital were still perfectly distinct. In other instances, the symptoms seem to be less easily recognised; I am ignorant whether these simulate the tuberculous affection in all respects.

The diagnosis is then to be founded rather on the succession of the symptoms, than on the separate existence of any one of them. A child labouring under a tuberculous disease of the lungs or abdomen, who should be taken with vomiting, constipation, slowness, and perhaps irregularity of the pulse, with the disorders of the nervous system already enumerated, would be regarded as labouring under this affection. If the child possess all the appearances of perfect health, the diagnosis is a little less certain, but still the order of the symptoms would in the vast majority of cases indicate the nature of the disease to be tuberculous meningitis.

Treatment.—All the cases which I witnessed were fatal; the want of success was not peculiar to the years during which I had observed. M. Charpentier, who had collected a series of cases eight years previously, did not see one recovery at the hospital. M. Rufz collected two cases of cure, which at the time he regarded as examples of the disease. The case to which I alluded of doubtful disease, seemed on the point of recovering, and another patient whom I saw before commencing the series of observations, recovered from the earliest symptoms; this child returned to the hospital some weeks afterwards, and died of tubercles in the lungs; on dissection the membranes of the brain were evidently thickened, although the precise alteration was not noted. The bad success of the treatment was not owing to its want of energy; some of the physicians had tried the most vigorous antiphlogistic means, others had prescribed purgatives together with depletion; and blisters were employed in some cases. I did not witness any attempt to produce rapid salivation by the use of mercurial ointment.

Medicine is necessarily as powerless in the decided cases, as it

is in phthisis or other tubercular affections; but there must be a stage preceding the development of the anormal substance; in this stage therapeutics may be of utility. I have nothing new to add relative to the treatment, which can scarcely become more positively fixed unless the distinction between the several varieties of disease classed under the term acute hydrocephalus or meningitis, be clearly made out. But as it is clearly the duty of a physician in treating cases hitherto incurable, to use those means which seem to offer the greatest chance of benefit, in making my election I should rely chiefly on moderate depletion, and an attempt to salivate the child by mercurial frictions. Very free depletion is not called for in most cases; the patients are scrofulous, and generally do not well bear a great loss of blood.*

ART. X. *Description of a New Œsophagus Forceps*. By CONSTANTINE WEEVER, M. D. of Detroit.

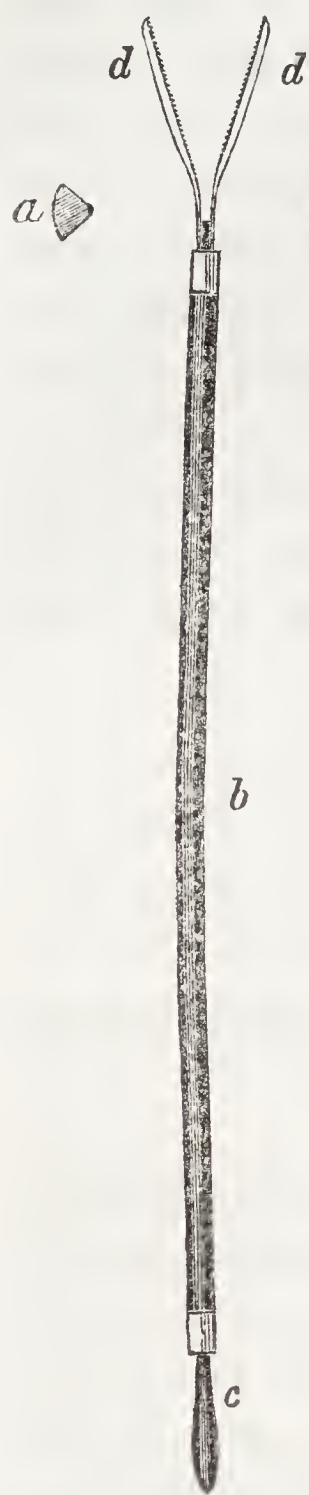
IT is admitted to be of the utmost importance to remove certain foreign bodies from the œsophagus, such as pins, needles, angular pieces of bone, &c. as their presence not unfrequently produces disastrous and fatal consequences; yet it is always a matter of considerable difficulty to extract them with the usual means, and if those bodies are situated near the cardiac termination of the œsophagus, it has generally been found impossible to remove them by the mouth, and the only alternative has been to thrust them into the stomach. This want of success appears to depend chiefly upon the imperfection of the instruments ordinarily employed for this purpose. Every surgeon who has had occasion to use them, knows that their employment is a blind and unscientific groping in the dark, which almost always ends in disappointment.

The above considerations, and a knowledge of the success which has attended the seizure of urinary calculi by the lithontriptic forceps, led me to construct the following instrument.

* The first part of this article was transmitted from Europe; the proof sheets were corrected by a friend, who was unable to decypher a few words of the manuscript; this circumstance will account for some singular verbal errors.

112 Weever's *Description of a New Œsophagus Forceps.*

It will be readily perceived that this instrument is particularly cal-



b. An elastic tube.
c. Whalebone stilet extending through the tube.
d, d Blades of the forceps firmly fixed to the stilet.
a, a. Section of the blades of the forceps, the proper size; their outer side is rounded, and the inner is brought to an edge, and is made rough like the end of a common forceps.

culated to remove those articles from the Œsophagus which would prove the most dangerous to life by their presence in the alimentary passages; pins, needles, and sharp pieces of bone, are of this class.

These forceps can be easily pressed down the throat, as the elastic branches accommodate themselves to the varying dimensions of the passage, and if the extraneous body does not come within their grasp in their first introduction, they must be withdrawn and the stilet turned one-fourth round, which will bring the blades of the forceps at a right angle with their former position; when they are again to be passed down, and the object of search will be seized with much certainty.

When the inner branches pass beyond the foreign substance, the movement is accompanied by a sensible click, which gives notice that the tube is to be pressed down a short distance while the stilet is held stationary; by this means the blades of the forceps are closely approximated, and whatever is within their grasp, will be firmly retained, and may be generally withdrawn without difficulty. One advantage of this instrument is this, that the materials of which it is composed, may be obtained in nearly every country village, and it can be constructed by any man of ordinary ingenuity. In

children, a flexible catheter will answer well for the tube, by removing its vesical extremity; and in adults the stomach tube, or in its absence, take a piece of wire of convenient flexibility, two feet in length, put one end of this into a circle about one-eighth of an inch in diameter, and then bend this circle to a right angle with the shaft of the wire.

This will serve every purpose for compressing the blades of the forceps.

The springs or forceps proper can be admirably constructed from the mainspring of a watch, by moderately heating it in the blaze of a lamp at the points where it is intended to make the acute angle, and form the internal branches.

Detroit, January 15th, 1834.

[NOTE.—Mr. GEORGE P. SCHIVELY, an ingenious surgeon's instrument-maker of this city, to whom we communicated the preced-

ing article, has made an instrument, which is very accurately represented in the accompanying figure. This instrument differs slightly from that described by Dr. Weever, in the blades of the forceps being nearly straight instead of curved; and in their being of a somewhat oval form instead of flat. These we conceive to be considerable improvements, as this instrument will be less likely than the original one to pass a foreign body in the œsophagus when the body is slender, as a pin or needle, or fish-bone; and also will not be liable to catch hold of the œsophagus.—EDITOR.]

ART. XI. *On the Efficacy of a Mixture of Camphor and Muriate of Ammonia in the Treatment of Suppression of Urine.* By ALEXANDER SOMERVAIL, M. D. of Loretto, Essex County, Virginia.

SUPPRESSION of urine is often produced from the situation of patients preventing them from evacuating the bladder when it is demanded, and they continue to suffer until they are at liberty, and then the power of evacuation is lost. The bladder, from over-distension, is paralyzed, and the sufferings of the patient go on increasing. The catheter is the usual and effectual remedy, and this must be repeated twice a day, till the lost power of evacuation is restored. With those patients which I have had, this has never returned till the end of the seventh day from the first introduction of the catheter, and never before, unless it has been used in a few hours after the retention began. I have had many cases so as to ascertain this, and been a witness of much suffering, and one death because the parts became inflamed and the catheter could not be introduced. I have heard of several deaths from the same cause, and such must often be the case. Since the use of elastic catheters, there is less danger when they can be introduced, because they can remain in for some days, and are easier introduced again. This I have done several times, still it is painful, and even dangerous, under many circumstances, and an easier remedy is desirable. This has been put in my power, as I think the following cases prove.

In September, 1830, I had a patient, a black woman, who was suffering from fever, attended by suppression of urine; of this latter affection I was not told. She recovered in a week. In October, 1831, she had a child, and an entire suppression of urine took place about two weeks afterwards. As usual, I told her I must use the catheter. She then said, cannot you give me the same medicine you gave me last year? I got well directly. On inquiry, she said she was then in pain from the same

cause and the medicine then given for the fever removed it. I gave her the mixture then used, which consisted of three grains of camphor and five grains of muriate of ammonia, made into an emulsion with gum Arabic, taken every two hours. Next day the suppression was removed, and did not return.

In April, 1832, an elderly free mulatto woman was much swelled from dropsy, the breathing distressing, and in the last days of pregnancy. She took an infusion of digitalis, which relieved the breathing: next day she was delivered. The infusion was left off, expecting all would pass off as usual. In a day or two the dyspnœa returned and the swelling continued. The digitalis was again given. It operated effectually; the breathing was relieved, the urine flowed in abundance, and the swelling disappeared. In the afternoon she disobeyed the call to make water, and suppression followed. I gave the camphor and sal ammoniac, as in the other case. In the evening she was a little relieved, the urine passed afforded relief. She only took three doses, a neighbour persuading her parsley root tea was better. I then urged her to take the mixture every two hours; this she did faithfully, and continued it for two days, and was completely relieved. She was then taken with frequent calls, accompanied with straining and ardor urinæ; the bladder empty. She was directed to drink half a pint of water every half hour till this was better, which was soon accomplished, and no more difficulty.

In October, 1833, a white woman, advanced in years, and who had been long sick, was overtaken with suppression of urine for several days, the bladder much distended, and suffering as usual. She took the same mixture, and was relieved that same day. Next day no obstruction remained, and this did not return.

On the 20th of January, 1834, I saw another white woman, the mother of a large family, who suffered for several days as usual. I gave her the mixture, she was at ease in half an hour. On the 3d of February, she was again in the same situation. I gave her the camphor only, thinking that was the active medicine. This she took that day and the next, growing worse all the time. In the morning she sent to me, stating her sufferings, I sent the sal ammoniac to mix with the camphor. The day after I went to see her. She said after the second dose she was quite relieved, and continued so. She had no sleep for three nights from suffering, but this night she slept so profoundly that those with her thought she was dead.

When I got home to-day, I found the daughter of a woman who had suffered in this way a year ago, and was relieved by the mixture. She was now again getting bad, and requested the same medicine,

which I sent, and saw her next day. She was better, but had only taken one dose, because it made her sick. I gave the sal ammoniac by itself, which did very well. This was not suppression, only dysuria, but the first attack was suppression.

Loretto, Essex County, Virginia, March 15th, 1834.

ART. XII. *Cases of Neuralgia with Remarks.* By W. A. GILLESPIE,
M. D. of Louisa, Virginia.

IT is not perhaps sufficiently well-known to the members of the medical profession, that tooth-ache, and what is vulgarly called jaw-ache, are frequently of neuralgic character and of miasmatic origin.* Many cases of this kind are submitted to the manual dexterity of some neighbouring mechanic, who extracts tooth after tooth, until at length the disconsolate sufferer, without experiencing the least relief, frequently abandons himself, in despair, to the most excruciating agony. Several cases have come under my observation, in which perfectly sound teeth have been removed, and often several in succession in consequence of no relief being afforded from the extraction of the first. In addition to this, tooth-ache drops of various kinds, many of which contain mineral acids, are used by the tormented sufferer in profusion, to the eventual destruction of his few remaining instruments of mastication. I am by no means opposed to the extraction of teeth, in proper cases, with due discrimination and reference to collateral circumstances. Carious, useless teeth should always be removed; but under scarcely any circumstance would I be disposed to remove a sound useful tooth. When odontalgia is produced by slight caries, complete success has been known to follow the mere starting of the tooth from the socket by the instrument, and immediately pushing it back into its natural position, thus destroying its nervous connection, whilst the tooth adhered firmly to the socket, and answered, in a good degree, the purpose for which it was intended. The following cases exemplify the success of quinine in neuralgic odontalgia. Notwithstanding the labours of many late writers, the pathology of neuralgia is still involved in much obscurity; but I believe no remedy, as a general one, is preferable to the sulphate of quinine. Many cases that were formerly termed rheumatism, ought manifestly to be classed with neuralgia; it is in

* M'Culloch, Bell, &c.

this way only that we can account for the many high encomiums passed on the Peruvian bark, as a remedy in acute rheumatism, by Drs. HUGH SMITH, GEORGE FORDYCE, Dr. HAYGARTH, &c.

CASE I. *July 29th.*—Mrs. S. had been subject to violent tooth-ache, or jaw-ache as she termed it, for three months; during this time she had applied to a mechanic who had extracted at different periods three sound teeth. No relief being afforded it was thought proper to have professional aid, and accordingly I was called to the patient a few hours after the extraction of the third tooth. It was one of the large molares of the upper jaw, perfectly sound, and its removal had had no effect on the pain, which was of that lancinating, shooting character, too intolerable almost to be borne, at least not without the greatest fortitude. Upon inquiry, finding the pain to have regular periodical exacerbations, and knowing the patient to be exposed to the miasms of a marsh which had produced in the same season some violent cases of remittent and intermittent fever, I viewed the disease as of miasmatic origin, and prescribed sulphate of quinine in free doses. There was in a short time a suspension of the paroxysms, and the patient, on account of the disagreeable taste of the quinine which was given in solution, discontinued its use.

August 15th.—The paroxysms of pain had now returned more severe than usual, I was again called to the patient, and again prescribed quinine which was not taken as directed, and on 20th I saw her again. I now prepared some pills of quinine, and represented to the patient the absolute necessity of taking them constantly and regularly, and predicted with confidence almost certain relief from her excruciating torments. She now took the medicine as prescribed regularly, and had the satisfaction of informing me during the same week that she had escaped the periodical returns of her distressing complaint, and was now well satisfied that the medicine had controlled it. She has since had no return of it.

CASE II. *September 28th.*—I was called to Mrs. K. residing in the immediate vicinity of the foregoing case, and exposed to the same miasms. She had suffered for two months with tooth-ache as she termed it, and had had two teeth extracted, both perfectly sound, with no relief; and having heard of the preceding case, she now concluded her's to be a similar one, which I found on examination to be the fact. Quinine was prescribed as above, and in a few days entire and perfect relief followed. Fomentations, blisters and purgatives had previously been used in this case with no perceptible relief.

She has since had no return.

Ellisville, December 15th, 1833.

REVIEWS.

ART. XIII. *Experiments and Observations on the Gastric Juice, and the Physiology of Digestion.* By WILLIAM BEAUMONT, M. D. Surgeon in the United States' Army. Plattsburgh, 1833. 8vo. pp. 280.

NOTWITHSTANDING the numerous treatises on digestion with which our medical libraries abound, and the extensive and repeated series of experiments that have been performed, within the last sixty years, in order to determine the nature of the changes which the food undergoes in the stomach, and the manner in which those changes are effected, but little satisfactory was known in relation to this important part of human physiology until a very recent period. Previously, indeed, to the publication in 1825 of the experiments of TIEDEMANN and GMELIN, of Heidelberg, and the contemporaneous ones of LEURET and LASSAIGNE of Paris, almost every thing in relation to the subject was involved in doubt and obscurity. By the investigations of these gentlemen many facts have been fully established, and not a few obscurities removed. But as important as have been the results of their labours, they are very far from affording the materials necessary for framing a clear and satisfactory theory of digestion. The fact is, that the investigation of this process is attended, under ordinary circumstances, with difficulties it is scarcely possible to surmount. Experiments in relation to it are necessarily performed upon the lower classes of animals, and they are consequently always liable to more or less error: while it is impossible to multiply them, upon the same subject, to the extent that is necessary, in order to study the successive changes which the food undergoes during chymification, as well as other important particulars in relation to the process, without deranging the regular healthy actions of the stomach. Hence all experiments performed upon living animals are to a certain extent inconclusive; upon certain points connected with the process of digestion they throw no light whatever. As was long since remarked by a very sensible writer on stomachic digestion*—

“To arrive at any thing like positive conclusions in regard to this subject, the experimenter must be enabled to inspect the interior of the healthy sto-

* Raynier, De Digestione in Ventriculo, 1792.

mach whilst its functions are going on, and study there the modifications which the composition of the alimentary bolus undergoes, from its entrance through the cardia until its final escape by the pylorus—we shall then, but I fear not before, be able to say what is the nature of digestion, and what are the powers by which it is effected.”

The opportunity here required, the occurrence of which was no doubt thought impossible by the writer just quoted, has actually been furnished to Dr. BEAUMONT, whose observations and experiments on digestion constitute the subject of the work before us. By a surgical case, nearly unique in its results, the interior of the stomach, in a state of health, and in the perfect performance of its functions, has been laid open to his view, and he has been enabled to study daily, for a series of years, the actions of that important organ—to mark the successive changes produced in the food during the process of digestion, and to determine with accuracy the composition and properties of the gastric fluids, and their effects upon the different kinds of aliment in ordinary use. With a laudable degree of zeal and industry, Dr. Beaumont has improved an opportunity for successfully investigating the process of digestion, which no inquirer ever before, or perhaps will ever again possess; and the results of his investigations are, as will readily be presumed, in the highest degree interesting. He has not, it is true, made any important discovery, but he has been enabled to settle conclusively many points which have heretofore been subjects of dispute, and to throw very considerable light upon others in relation to which our views were formerly vague and confused. The report of his experiments and observations constitutes, unquestionably, in many particulars, the most important work ever published on the physiology of digestion. But while we freely concede to it this, as we believe, merited degree of praise, we must, at the same time, be permitted to say, after a very careful and repeated perusal of the work, that we have been not a little disappointed in finding that so much is left in regard to the process of digestion still uninvestigated. With the peculiar facilities for studying the subject in its fullest extent, possessed by Dr. B., he has certainly effected far less than we had anticipated. His experiments so far from solving the two great problems in regard to the physiology of the stomach; namely, 1st, in what does chymification consist, and 2d, in what manner is it effected?; leave the first in all the obscurity it was before involved. Dr. B. has been evidently called, by circumstances, to the performance of a task, with little of that preparation so essential for its accomplishment. He appears not to have taken sufficient pains to become acquainted with the labours of his predecessors and contem-

poraries in the same field of investigation. Had he studied with attention the experiments, at least of CHAUSSIER and MONTEGRE, and the more recent ones of Tiedemann and Gmelin, and Leuret and Laissaigne, he would have avoided one or two errors into which he has fallen when alluding to the actual state of our knowledge on the subject of digestion, while a variety of comparative experiments would have been suggested to him, the result of which would have tended, in a very great degree, to settle certain disputed points in regard to the real action of the gastric fluid; experiments which can be performed, in a satisfactory manner, only with the peculiar facilities which he possessed. The doctor is also, unfortunately, devoid of that proficiency in the details of practical chemistry which is all-important in conducting experimental investigations into the action of the gastric juice, and into the process of digestion generally. Had he been able to test, by a careful analysis, the changes which the food undergoes during its conversion into chyme, and compared these with the changes induced in it by the action of the gastric juice out of the body, he might, in all probability, have been enabled to claim the honour of having fully and satisfactorily explained the mode in which stomachic digestion is effected; he would, at least, have set at rest the dispute which exists between those physiologists who refer chymification to the vital action of the stomach, aided by the solvent powers of the salivary and gastric fluids, and those who maintain that it is to be ascribed solely to a specific solvent secreted by the vessels of the stomach.

We do not wish to be understood by these remarks as detracting the least from the high praise we have already bestowed upon the labours of Dr. Beaumont. These are unquestionably all-important—and have advanced, in a very great degree, our knowledge of one of the most important of the animal functions; giving to us facts in relation to numerous particulars where before we were in possession of merely plausible hypotheses. All we regret is, that the peculiar advantages possessed by Dr. B. for studying the process of digestion, had not fallen to the lot of some one better qualified, in certain respects, for deriving from them *all* the advantages to physiology they were so well calculated to afford.

We have every confidence in the good faith in which the experiments of our author were performed, and the accuracy with which they are reported. He appears, however, to have been too firmly prepossessed with the idea, that in order to convict of error those who deny the validity of the deductions drawn, by the majority of physiologists, from the experiments heretofore performed in relation

to the subject of digestion, all that was necessary was to establish the fact of the solvent powers of the gastric juice. His having overlooked the real points in dispute between these gentlemen, and such as advocate the existence of a specific chemical solvent, as the agent of chymification, has led him to denounce all who dissent from the opinions of the latter, as “men of vivid imaginations, and great powers of mind,” who “become restive under the restraints of a tedious and *routine* mode of thinking, and strike out into bold and original hypotheses to elucidate the operations of nature, &c.,” who are “averse to the slow and tedious processes by which truths are attained.” To whose “notions of unrestrained genius—the process of developing truth, by patient and persevering investigation, experiment and research, is incompatible;” and who advance *heresies* for “the gratification of a *morbid* desire to be distinguished as the propagators of new principles in philosophy, or as the head of a new sect.” When Dr. Beaumont employed this language he was certainly unaware, that on the list of the denounced are to be found the names of several of the most cautious and laborious investigators among the physiologists of this country and of Europe; and that the greater number, so far from denying the solvent powers of the gastric fluids, have performed numerous experiments to prove the fact. But even admitting that Dr. B. had succeeded in proving their opinions in regard to digestion to be erroneous, he should have recollected that no one of them possessed the advantages for investigating satisfactorily the subject, which accident has placed at his command; their rejection of conclusions drawn from experiments so inconclusive and contradictory as those that have heretofore been performed in relation to stomachic digestion, is rather to be viewed as an indication of philosophic caution, than as a fondness for bold hypothesis. But the fact is, the incorrectness of the views of these gentlemen, in many respects at least, is still far from being established: and here we may suggest to Dr. B. that he can claim no credit whatever for the opportunity he possessed for pursuing the course of experiments detailed in the work before us, but only so far as he has improved that opportunity for the advancement of knowledge.

In our examination of the work before us, we shall endeavour to present to our readers a clear view of the facts and deductions of the author, with an occasional comment upon some of the opinions which he has advanced. We shall follow, however, a somewhat different arrangement from that adopted by Dr. Beaumont.

The subject upon which the experiments of the latter were performed, is a young man, of a good constitution, robust and healthy,

who, on the 6th of June, 1822, he being then eighteen years of age, was accidentally wounded by the discharge of a musket loaded with buck-shot. The load entered his body posteriorly, and in an oblique direction, forwards and inwards, literally blowing off a portion of the integuments and muscles of the size of a man's hand, fracturing and carrying away the anterior half of the sixth rib; fracturing the fifth; lacerating the lower portion of the left lobe of the lungs and the diaphragm, and perforating the stomach. On examination, twenty-five or thirty minutes after the accident, a portion of the lung, as large as a turkey's egg, was found protruding through the exterior wound, lacerated and burnt, and immediately below this, was "another protrusion, which, on further examination, proved to be a portion of the stomach, lacerated through all its coats, and pouring out the food" that had been eaten in the morning "through an orifice large enough to admit the forefinger."

It is unnecessary, on the present occasion, to follow out the surgical details of the accident and its treatment. For seventeen days every thing that was taken by the mouth soon passed out at the wound, and the only manner in which the patient was sustained was by nutritious injections per anum. During this period alvine evacuations could not be obtained, notwithstanding cathartic enemata were given, and various other means adopted to promote them. As soon, however, as compresses and adhesive straps could be applied over the opening into the stomach, and food was retained in the latter, by the aid of purgative injections, a very hard, black, fetid stool was procured, followed by several similar ones; after which the bowels became quite regular, and continued so.

"No sickness, nor unusual irritation of the stomach, not even the slightest nausea, was manifest during the whole time; and, after the fourth week, the appetite became good, digestion regular, the alvine evacuations natural, and all the functions of the system perfect and healthy.

"By the adhesion of the sides of the protruded portions of the stomach to the pleura costalis and the external wound, a free exit was afforded to the contents of that organ, and effusion into the abdominal cavity was thereby prevented."

Cicatrization and contraction of the external wound commenced in the fifth week; the stomach became more firmly attached to the pleura, but the orifice still remained open. This resembled, in every thing but the absence of a sphincter, the natural anus, with a slight prolapsus. At every dressing it allowed the contents of the stomach to flow out, in proportion to the quantity recently taken, and when

the stomach was empty, or nearly so, a partial inversion would take place, unless prevented by the application of the finger.

“Frequently, in consequence of the derangement of the dressing, the inverted part would be found of the size of a hen’s egg. No difficulty, however, was experienced in reducing it by gentle pressure with the finger, or a sponge wet with cold water, neither of which produced the least pain.

“In the seventh week—the circumference of the external wound was at least twelve inches, and the orifice in the stomach nearly in the centre, two inches below the left nipple, in a line drawn from this to the point of the left ilium.”

The food and drinks taken into the stomach were prevented from escaping through the perforation by a compress and tent of linen kept on by adhesive strips.

By the 6th of June, 1823, one year from the occurrence of the accident, the injured parts were all sound and firmly cicatrized, with the exception of the perforation leading into the stomach, which was about two and a half inches in circumference. From this time the patient continued gradually to improve in health and strength, and the newly-formed integuments became more and more firm.

“At the point where the lacerated edges of the muscular coat of the stomach and intercostal muscles met, and united with the cutis vera, the *cuticle* of the external surface, and the *mucous membrane* of the stomach *approached* each other very nearly. They did not unite, like those of the lips, nose, &c. but left an intermediate marginal space, of appreciable breadth, completely surrounding the aperture. This space is about a line wide, and the cutis and nervous papillæ are unprotected, *and* as sensible and irritable as a blistered surface abraded of the cuticle. This condition of the aperture still continues, and constitutes the principal and almost only cause of pain or distress experienced from the continuance of the aperture, the introduction of instruments, &c. in the experiments, or the exudation of fluids from the gastric cavity.”

Compresses and bandages were constantly demanded, to prevent the escape of the food from the stomach, until the winter of 1823–4; at this period a small fold or doubling of the inner coats of the stomach appeared, forming at the superior margin of the orifice, slightly protruding, and increasing in size until it filled the aperture. This valvular formation adapted itself to the opening into the stomach, so as completely to prevent the efflux of the gastric contents when the stomach is full, but was easily depressed by the finger. When the stomach is empty it plays up and down simultaneously with the respiratory muscles.

In the spring of 1824 the individual had perfectly recovered his natural health and strength. The aperture in the stomach still remained, but the surrounding wound was firmly cicatrized to its

edges. From this period to the present time he has enjoyed general good health. He has been active, athletic, and vigorous; exercising, eating and drinking like other healthy and active people. For the last four months, (of the autumn of 1833,) he has been unusually plethoric and robust, though constantly subjected to a continued series of experiments on the interior of the stomach; allowing to be introduced or taken out, at the aperture, different kinds of food, drinks, various instruments, and the different contents of the stomach, almost daily, and sometimes hourly.

The perforation through the coats of the stomach is situated about three inches to the left of the cardia, near the left superior termination of the great curvature. On pressing down the valve when the stomach is full, the contents flow out copiously.

“When the stomach is nearly empty and quiescent, the interior of its cavity may be examined to the depth of five or six inches if kept distended by artificial means; and the food and drinks may be seen entering, if swallowed at this time, through the ring of the œsophagus. When entirely empty, the stomach contracts upon itself, and sometimes forces the valve through the orifice, together with an additional portion of the mucous membrane, which becomes completely inverted, forming a tumour as large as a hen’s egg. After lying on the left side, and sleeping a few hours, a still larger portion protrudes, and spreads out over the external integuments, five or six inches in circumference, fairly exhibiting the natural rugæ, villous membrane, and mucous coat (?) lining the gastric cavity. This appearance is almost invariably exhibited in the morning, before rising from bed.”

Dr. Beaumont commenced his first series of experiments in May, 1825; in the month of August ensuing, the young man, upon whom they were performed, returned to Canada, of which place he was a native, where he remained four years. In August, 1829, he came again to the United States, and entered into the service of Dr. B. when the latter commenced a second series of experiments, and continued them uninterruptedly until March, 1831. Soon after this period, circumstances made it expedient for the subject of the experiments to return, with his family, again to Canada. In November, 1832, he once more came back and engaged himself to Dr. B. for twelve months, for the express purpose of submitting to another series of experiments, which were performed on him at Washington, and continued to March, 1833. In July of the same year, a fourth series of experiments were commenced at Plattsburgh, New York, and completed on the first of November, 1833.

“The usual method of extracting the gastric juice, for experiment, is by placing the subject on his right side, depressing the valve within the aperture, introducing a gum-elastic tube, of the size of a large quill, five or six inches

into the stomach, and then turning him on the left side, until the orifice becomes dependent.

“On introducing the tube, the fluid soon begins to flow, first by drops, then in an interrupted, and sometimes in a short continuous stream—Moving the tube about, up and down, or backwards and forwards, increases the discharge. The quantity of fluid ordinarily obtained is from four drachms to one and a half or two ounces, varying with the circumstances and condition of the stomach. Its extraction is generally attended by that peculiar sensation at the pit of the stomach, termed sinking, with some degree of faintness, which renders it necessary to stop the operation. The usual time of extracting the juice is early in the morning, before eating, when the stomach is empty and clean.”

The fluid obtained in this manner, when unmixed with any thing excepting a portion of the mucus of the stomach, with which it is perhaps always combined, is clear and transparent, inodorous, a little saltish, and very perceptibly acid to the taste; having the flavour, when applied to the tongue, of thin mucilage slightly acidulated with muriatic acid. It is readily diffusible in water, wine, or spirits; slightly effervesces upon the addition of alkalies; possesses the property of coagulating albumen in an eminent degree; is powerfully antiseptic, checking the putrefaction of meat, and effectually restoring the healthy action when applied to old, foetid sores, and foul ulcerating surfaces. When not separated by filtering, the mucus combined with the fluid, gives to it a degree of ropiness, but soon falls to the bottom in loose, white flocculi. Saliva imparts to the gastric fluid an azure tinge and frothy appearance.

Equal parts of the gastric fluid and alcohol, mixed together and agitated, produced a turbid, milk-white fluid, upon the surface of which, after standing at rest, was formed a thin, white coat of fine, loose coagula. When the alcohol was first added to the fluid, and before the two were mixed by agitation, the latter settled to the bottom while the alcohol remained on the top, indicating that its specific gravity was less than that of the fluid.

The sensible properties of the gastric fluid are changed by a variety of circumstances; as by the admixture of saliva, water, mucus, and occasionally bile, perhaps, also, pancreatic juice. Derangement of the digestive organs, slight febrile excitement, fright, or any sudden emotion of the mind, occasions, also, material alterations in its appearance. Excess in eating causes a rancid state of the fluid, by which its solvent action is retarded. Dr. Beaumont conceives, however, that the special solvent itself—the *gastric juice*—is probably, “invariably the same substance.” The correctness of this latter opinion, the experiments before us are far, however, from establishing. It would be an interesting inquiry, which we are somewhat sur-

prised Dr. B. has never thought of instituting, to ascertain whether the composition of the gastric juice is not varied according to the kind of aliment to which the individual is confined. According to MM. CHAUSSIER, VIREY, PINEL, and VOISIN, the properties of the solvent fluid secreted by the stomach differ in different classes of animals, and in the human subject at different periods, and that this difference has a direct relation to the nature of the food. The first mentioned gentleman states, that its acidity is the greatest in herbivorous animals, the least in the carnivorous.

In regard to the composition of the gastric fluid, a portion examined by Professors DUNGLISON and EMMETT was found to contain free *hydrochloric* and *acetic* acids, *phosphates* and *hydrochlorates*, with bases of *potassa*, *soda*, *magnesia*, and *lime*, and an animal matter soluble in cold water, but insoluble in hot. The existence of free *hydrochloric* acid in the gastric fluid was also evinced in the portion examined by Professor SILLIMAN; in all other respects, however, the analysis of the latter gentleman is any thing but satisfactory.

The result of Professors Dunglison and Emmett's analysis corresponds very nearly with that of Tiedemann and Gmelin, who found the gastric fluid to contain, besides mucus, osmazome, and salivary matter, hydrochloric and acetic acids, alkaline sulphates and hydrochlorates, the alkali being chiefly soda; phosphate and muriate of lime and other salts in minute proportions.

Leuret and Lassaigne state the component parts of gastric juice to be water, hydrochlorate of ammonia, chloride of sodium, mucus, an animal principle soluble in water, phosphate of lime and lactic acid; they deny, however, the existence in it of free hydrochloric acid.

Now, as the lactic acid of Leuret and Lassaigne has been shown by BERZELIUS to be merely a variety of the acetic, the existence of the latter in gastric juice may be considered as settled; while the researches of PROUT, CHILDREN, GRAVES, TIEDEMANN and GMELIN, borne out as they are by the analysis of Dunglison, Emmet, and Silliman, establish likewise, we conceive, beyond the possibility of doubt, the presence of the hydrochloric acid in a free state.

The solvent power of the gastric juice, in relation to which so much doubt and uncertainty have heretofore existed, is proved in the most conclusive manner by Dr. Beaumont. It can never again become a subject of dispute. Almost every variety of alimentary matter, whether animal or vegetable, when submitted to the action of the fluid taken from the stomach, and kept at a temperature of about 100° Fahrenheit, was found to become, in a few hours, completely

softened and reduced to a paste, resembling very nearly the contents of the stomach a short period after the same kinds of aliment had been eaten. The rapidity with which the substances were dissolved by the gastric fluid out of the body, was always in proportion to the purity of the fluid, and the tenderness of fibre and state of minute division of the substances submitted to its action. Milk and liquid albumen were found invariably to be first coagulated by the gastric fluid and then dissolved. The solution of only a certain proportion of any given aliment was effected by a certain quantity of gastric juice. Thus it was found, in many experiments, that the articles submitted to the action of the fluid taken from the stomach became softened or dissolved to a certain extent, when all further change would cease; but when more gastric juice was added, the process of solution would again commence. Cold gastric juice was found to be almost entirely inert. In one experiment, a piece of roasted beef was submitted to the action of the fluid placed in the open air at a temperature of 34° ; after twenty-four hours it was not in the least dissolved. The temperature of the fluid being now raised to 100° , the process of solution commenced and advanced regularly.

A curious fact is shown by the experiments of Dr. B.; that food, namely, taken from the stomach a short time after it has been eaten and thoroughly mixed with the gastric juice, will become completely dissolved, provided it be kept at a temperature of 100° .

Dr. B. has found that the gastric fluid undergoes little or no change when kept in vials for a length of time. On the 1st of November, 1833, he added to one ounce of the fluid taken from the stomach eleven months before, and which was as pure as when first extracted, thirty grains of lean mutton, boiled and masticated. The whole being placed in the axilla for six hours, sixteen grains of the meat became dissolved; the solution presenting the usual appearance of chyme.

The period, as well as the quantity of gastric juice required for the solution of different alimentary substances out of the body varied, as we have already remarked, according to the density of their texture, and their state of division. Sago and tapioca, boiled, were dissolved completely in about 3 hours and 15 minutes; fresh wheat bread in 4 h. 30 min.; milk, boiled, in 4 h. 15 min.; unboiled, in 4 h. 45 min.; gelatine, boiled, in 4 h. 45 min.; hard-boiled eggs, in 8 h.; soft-boiled, in 6 h. 30 min.; oysters, raw and entire, in 7 h. 30 min.; stewed, in 8 h. 25 min.; beefsteak, in 8 h.; boiled beef, in 9 h. 30 min.; raw pork, in 8 h. 30 min.; fresh mutton, boiled, in 8 h. 30 min.; beef suet, boiled and entire, in 12 h.; mutton suet, boiled and di-

vided, 10 h.; cream, 25 h. 30 min.; olive oil, 60 h.; apples, raw and entire, 18 h.; masticated, 8 h. 30 min.; turnips, boiled and entire, 13 h. 15 min.; raw, 18 h.; boiled potatoes, entire, 14 h.; mashed, 8 h. 30 min.; boiled parsnips, mashed, 6 h. 45 min.; entire, 13 h. 15 min.; raw and entire, 16 h.; raw cabbage, masticated, 12 h. 30 min.; boiled, 20 h.; mellow peach, cut small, 10 h.; mashed, 6 h. An entire portion of boiled tendon required 24 h. for its solution; when masticated, 12 h. 45 min.; a portion of boiled cartilage, divided, 12 h.; masticated, 10 h.; and a solid piece of bone, boiled, 80 h. In the above experiments the quantity of gastric juice employed was one ounce nearly to a drachm of the article submitted to its action.

By the above statement it will be seen that fat and oily food was among the articles which presented the greatest resistance to the solvent powers of the gastric fluid; this Dr. B. found to be invariably the case, as well in the stomach as out of it. Some of his experiments would seem to indicate that the digestibility of this species of food is facilitated by a slight admixture of bile with the gastric juice, and that, very generally, when aliment containing any quantity of fat is eaten, bile is very generally found in the cavity of the stomach.

We felt extremely desirous of comparing the observations of our author in relation to the changes produced, in the healthy process of digestion, upon the different alimentary substances, with those of Tiedemann and Gmelin, by whom this subject has been examined with uncommon care and minuteness; but the want of precision in the description given of those changes by the former, and the entire absence of any thing like chemical analysis, prevent this from being done in a manner calculated to lead to satisfactory results. Taking, however, the articles albumen, gelatine, new cheese and bone, we shall give first the observations of the German experimenters, and then subjoin those of Dr. Beaumont.

Tiedemann and Gmelin found, that in the natural process of digestions, *liquid albumen* forms a homogeneous fluid, in which the albumen remains entirely unchanged; this species of chyme, they remark, passes the pylorus more rapidly than any other. *Coagulated albumen* they found to be much more slowly dissolved; the fluid formed possessing the properties of coagulated albumen dissolved in acetic acid.

Gelatine they found to be converted into a clear brownish fluid, in which neither gelatine nor albumen could be discovered.

New cheese, according to these gentlemen, forms an opaque, dirty-white fluid, which contains much animal matter, which is neither casein, gelatine, nor albumen.

Bones, in their experiments, formed a liquid, which contained not only animal matter, but also a large amount of lime.

The following observations in regard to the changes produced in the same substances, are derived from the experiments of Dr. Beaumont, performed, in the majority of cases, with the gastric juice out of the body; with the general statement that they resembled very nearly the changes which similar aliment was found to undergo when submitted to the natural actions of the stomach.

When gastric juice and *liquid albumen* were mixed together, they were so much alike in their appearance at first, that no change was perceptible; but in ten or fifteen minutes, small, white flocculi began to appear, floating about, and the mixture became of an opaque whitish appearance. This appearance continued slowly and uniformly to increase for three hours, at which time the fluid had become of a milky appearance; the small flocculi had mostly disappeared, and a little light coloured sediment subsided to the bottom. No results are given of the action of the gastric fluid upon *coagulated albumen*.

Eight ounces of calf's-foot *jelly* alone were swallowed at 1 o'clock, P. M. The stomach being examined in twenty minutes, its contents were found to consist of gastric juice combined with the jelly, nearly all of which was in a fluid state; a few particles only of entire jelly were suspended in the fluid, with a few small, yellowish coagula floating near the surface. At 2 o'clock no appearance of jelly could be discovered. In another experiment, four ounces of pure *gelatine*, (*ichthyocolla*,) prepared with boiling water, were swallowed at forty-five minutes past eight o'clock, A. M. At the end of fifteen minutes the stomach appeared to be nearly as full as after an ordinary meal; it contained a clear fluid of the consistence of the white of an egg, composed apparently of the gelatine dissolved or diffused in the gastric juice. The two could not, however, be distinguished from each other. After the lapse of forty-five minutes the stomach was found to be nearly empty, all that could be obtained from it being two drachms of a fluid, which appeared to be a mixture of gelatinous chyme, gastric juice, and mucous flocculi, more opaque and ropy than the gastric juice alone, and more acid than were the fluids of the stomach immediately before the gelatine was swallowed.

Thirty grains of *new cheese*, masticated, were put in three drachms of gastric juice, and kept in the axilla for eight hours and thirty minutes, when the vessel was found to contain a rich milky fluid, on which floated five grains of a matter consisting principally of oil combined with a soft caseous substance. The fluid had a strong acid, or

peculiar acrid taste, and emitted a strong caseous smell, even stronger than the cheese itself, before the experiment.

Bone after being dissolved in the gastric juice, formed a grayish, white, opaque fluid, nearly of the colour and consistence of clear, thin gruel, with considerable fine brown sediment after standing at rest a while. It had a peculiar insipid, sweetish taste and smell, without the least foetor or rancidity.

The solvent powers of the gastric fluid being established, an important inquiry next presents itself; upon what, namely, do those powers depend? In other words, does the gastric juice act upon the food by virtue of certain specific properties which distinguish it from all other chemical agents, or are its solvent powers to be attributed solely to the acids and salts which it contains? The first of these propositions is assumed by Dr. B.

“The action of the stomach and its fluids on aliment is believed,” he remarks, “to be *svi generis*, invariably the same on health in all kinds.

“Chyme is a compound of gastric juice and aliment. It may be regarded as a *gastrite* of whatever it is combined with, varied according to the kind of aliment used.

“Like all other chemical agents, the gastric juice decomposes or dissolves, and combines with a fixed and definite quantity of matter when its action ceases.”

Without stopping to comment upon the absurd and inadmissible term *gastrite*, applied to the presumed chemical compound resulting from the union of definite proportions of gastric juice and the different alimentary substances, albumen, gelatine, fecula and the like, we shall merely remark, that the specific and invariable character and action of the fluid secreted by the stomach are mere assumptions, which are disproved by the very analysis of the fluid, which shows it to be a *mixture* of mucus, water, and various salts and acids, the nature and chemical action of which are well understood. Not a single experiment is adduced by the author which would lead us even to suspect that the gastric juice possesses any solvent or chemical property other than those which result from the substances which are known to enter into its composition, or that these do not vary, in their relative proportions at least, at different times.

If it can be shown that other of the animal fluids, or even water, with the addition of one or other of the active ingredients contained in the gastric juice, will cause a solution of alimentary substances, similar to that produced by the latter, the idea of any specific action being exerted by it is completely overthrown. As early as 1783, it was stated by CARMINATI, that he digested veal with a little salt, in

pure water at 100° Fah. and that the veal became partially dissolved. He employed the decanted liquor in similar experiments, until at length he procured, as he asserts, a fluid possessed of solvent properties, similar to those of the gastric juice; and in 1788, STRUVE and MAQUART made an artificial solvent of a weak solution of ammonia, which had the same properties, according to their statement, as the gastric juice. But passing over these experiments, which may be considered inconclusive, we find that Tiedemann and Gmelin in 1825, found that water slightly impregnated with acetic or hydrochloric acid, as well as a weak solution of either the acetate or hydrochlorate of ammonia severally dissolved, more or less of nearly all the animal substances employed as food. Several experiments were likewise performed by Dr. Beaumont, which prove the solvent action upon food of diluted acetic and hydrochloric acids. In one of these experiments, equal portions of beef steak masticated, were immersed in gastric juice, and in an equal quantity of a mixture of muriatic and acetic acids, reduced by the addition of water to the flavour of the gastric fluid as nearly as practicable. Both were kept by means of a sand bath at the temperature of 100° Fah.; at the end of nine hours the meat in the gastric juice was all dissolved—that in the acid mixture when filtered, left a residuum weighing nine grains, of a gelatinous consistence. The solution in the gastric juice was opaque, and of a lightish gray colour, and deposited on standing a brown sediment. That in the acid mixture was also opaque, but of a reddish brown colour, and deposited no sediment.

A similar experiment was repeated with pure dry gelatine. At the end of nine hours the gelatine in the gastric juice was entirely dissolved; that in the acid mixture when filtered, left a residuum of three grains of a gelatinous consistence. The solution in the gastric juice was opaque, and of a whitish colour, with a little fine brown sediment; that in the dilute acids was also opaque, but of a reddish brown colour, and of a thin, mucilaginous consistence, without any sediment. When an infusion of nut-galls was added to the first, it produced a rich cream-like fluid, and slowly precipitated a fine compact sediment; when added to the second, the whole formed immediately into a coarse, brown coagulum. After standing a while, a large, loose, brownish sediment was precipitated, leaving a light coloured fluid, which became subsequently as white as milk, while the sediment became compact, and remained so.

The same experiment with gelatine being repeated, at the end of five hours and a half the portion in the gastric juice was all dissolved to a mere mite, that in the acid mixture nearly so, six grains only, of

a gelatinous consistence, remaining. The fluid in the first was of a bluish-white colour; in the second yellowish, or about the colour of dry gelatine. After remaining two hours and three-quarters longer, the gelatine in the dilute acid was entirely dissolved, and the fluids of both were nearly similar. The addition of an infusion of nut-galls formed in each loose, light-coloured coagula. In the solution formed by the gastric juice a compact sediment was thrown down, leaving an opaque milky fluid. In the solution formed by the acids, the coagula were not precipitated until after the lapse of forty-eight hours, forming then a compact mass with distinct particles of undissolved gelatine mixed with a dirty white-coloured, curd-like substance.

Another experiment was performed with a mixture of hydrochloric and acetic acids, diluted with water to the flavour of gastric juice. In this was immersed a portion of broiled steak, cut fine, and the same amount of steak was immersed in an equal portion of gastric juice. In six hours and three-quarters, the meat in the latter was nearly all dissolved; in eight hours longer, that in the acid mixture was dissolved with the exception of a very small jelly-like mass. The two liquids now resembled each other very nearly. That from the gastric juice being opaque and of a lightish-gray colour, with a dark brown sediment on standing; that from the acid mixture was also opaque, of a reddish-brown colour, but without sediment. The addition of an infusion of galls caused in the first a fine reddish-brown precipitate, leaving an opaque liquor of a similar colour; in the second, a more copious precipitate, leaving a clearer and thinner, almost transparent, liquor of a yellowish colour.

It is well known that Montegre, in experiments performed with the saliva acidulated with vinegar, succeeded in dissolving various articles of food into a chymous pulp. Of the correctness of these experiments we have not the least doubt, having seen them repeated in this city with very similar results to those stated by Montegre, and having before us the additional testimony of a very late French experimenter,* who has shown that the saliva, as well as the mucus of the intestines, obtained by opening the abdomen of an animal before eating, when slightly acidulated and kept at the temperature of the human body, will convert the food immersed in it for twenty-four or thirty-six hours into a grayish, perfectly homogeneous paste. That the intestinal mucus will produce changes in food very analogous to those resulting from the action of the gastric juice, is attested also

* Benjamin Voisin de la Digestion Considérée en Général. Paris, June, 1833.

by TIEDEMANN and GMELIN as well as by LEURET and LASSAIGNE. The following experiment was performed by Dr. Beaumont. Two equal portions of saliva were acidulated to about the flavour of gastric juice, the one with acetic, the other with muriatic acid, and in each were immersed two pieces of parsnip and two of carrot, the one boiled and the other raw, each weighing ten grains. The temperature of the fluids was kept at 100° Fahrenheit. After forty-eight hours, the parsnip in the saliva with muriatic acid had lost four grains, the carrot nothing; the parsnip in the saliva with acetic acid had lost six grains, and the carrot four; they appeared to have been rather macerated and diffused than dissolved or digested. The two fluids and their contents were now mixed together, and after twenty-four hours the whole remaining mass of vegetable matter weighed twelve grains. The fluid appeared now a little more chymous, and was rather turbid.

It strikes us as not a little surprising that these experiments with artificial solvents did not suggest themselves to Dr. B. at a much earlier period than they were performed, (February, 1833,) and that when entered upon they were not more frequently repeated with different articles of food and with acid mixtures of various strength. Incomplete as they are, they, however, prove that as far as it regards its solvent properties at least the gastric fluid is not *sui generis*.

It will not do to say that the product of these artificial solutions is not identical with that resulting from the action of the gastric juice. This must be proved by a chemical analysis of the two. But even if they should be shown in this manner to differ materially, it is to be recollected that the gastric juice contains chemical agents independently of its acids, all of which are doubtless necessary in causing the solution of the different kinds of food, or perhaps of its different nutritive principles.

Having thus examined the observations of our author upon the nature and action of the gastric juice, we shall proceed next to the consideration of the various phenomena connected with the process of digestion. The opportunities he possessed for the careful study of these render his remarks in relation to them peculiarly interesting. It will be proper, however, to notice first the views of Dr. B. in regard to the uses of the saliva.

Excepting as a means of introducing food into the animal stomach, Dr. Beaumont maintains that mastication and insalivation are to be considered as “perfectly non-essential to chymification.” Neither, he conceives, would be necessary could the food in any other way be introduced into the stomach in a finely divided state. The chyme produced

by the action of the gastric fluid, out of the body, on food unmixed with saliva, exhibited, he remarks, the same sensible appearances, and was affected by reagents (?) in the same way, as that which was formed by food which had been previously masticated, mixed with the saliva and swallowed. Subsequently, Dr. B. admits that *mastication* "is absolutely necessary to healthy digestion," that it is to be considered "as one of the most important preliminary steps in the process." Although these different statements amount to a direct contradiction in language, yet we presume that all that is meant is that perfect comminution of the food, in whatever way it may be effected, is essential to its digestion; though we cannot conceive how the process of mastication can be studied in its effects separately from those of insalivation, excepting with the facilities possessed by Dr. B. and of these, so far as we are able to judge from the detail of its experiments, he does not appear to have availed himself. A series of comparative observations, showing the difference in the digestibility of substances swallowed after mastication in the usual manner, and those introduced into the stomach through the opening in a state of minute division only, would have settled the question; especially if the composition of the chyme formed in both instances had been carefully examined. Dr. Beaumont, it is true, asserts, as we have already remarked, that chyme from food mixed with the saliva and swallowed, and that produced by the action of the gastric juice without any mixture of saliva, did not differ in appearance, and was affected similarly by reagents—the results of these experiments are not given in detail, and of course we cannot judge of their accuracy. In one experiment it was found that the saliva, when added to aliment out of the body, had the effect of facilitating the putrefaction of the latter. This agrees with the observations of the recent German and French physiologists, and with those of Montegre. If we even admit that the only effect of this secretion is to induce in the food an incipient state of putrefaction, this of itself, according to our author's own showing, would prove that, so far as it regards animal food, it has a very considerable agency in facilitating digestion, for "the digestibility of most meats," he remarks, "is improved by incipient putrefaction, sufficient to render the muscular fibre slightly tender."

The important part performed by the saliva in digestion, is proved, we conceive, by the fact of the large glandular apparatus for its secretion, with which nearly all animals are furnished; by the great quantity which is poured into the mouth during the process of mastication—far more than would be necessary, if it had no other office, as

supposed by Dr. B., than to facilitate deglutition by lubricating the alimentary bolus; and by the additional fact, that in the duodenum the chyme is invariably mixed with another portion of fluid, identical almost in its composition with the saliva. No one who has examined a portion of food after it has been well masticated, and intimately combined with the fluid furnished by the glands of the mouth, but must be convinced that a very considerable change has been produced in it. I have ascertained *positively*, remarks Dr. Jackson,* that the saliva does exert a very energetic operation on the food; separating, by its solvent properties, some of its constituent principles, and performing a species of digestion. Voisin also† declares, that when the food is retained for a long time in the mouth, and intimately mixed with the saliva, it undergoes an actual change, by which its original character is no longer distinguishable. “I have seen it,” he tells us, “converted into a grayish homogeneous pulp, very much like chyme.” This change in the appearance of the aliment does not merely consist, he adds, in its conversion into a soft mass, by which it is rendered more easily swallowed—it is something more; the aliment experiences a commencing decomposition. In one experiment related by this author, when food, well triturated and imbued with saliva, was introduced into the small intestine of an animal, in two or three hours its chymification was as complete as if the process had been effected in the stomach. But Dr. Beaumont is not content with setting down the saliva as unnecessary to digestion, he has undertaken to prove further, that it actually impedes the solvent action of the gastric juice. “It would seem,” he remarks, “from two or three of the experiments on artificial digestion, which were instituted for the purpose of comparison, that the mixture of saliva with the gastric juice rather retarded its solvent action;” and when mixed in large amount with the gastric fluid, it renders it foetid in a few days. Were we to admit the opinion of Dr. B. to be correct, namely, that the mixture of saliva with the solvent fluid of the stomach vitiates the latter, this would be equivalent to asserting that digestion by the natural actions of the stomach is less perfect than that performed by filtered gastric juice on finely comminuted aliment out of the body. For we are to recollect that when solid food is eaten, it does not enter the stomach until it is mixed, by the process of mastication, with a large quantity of saliva, and that under ordinary circumstances a portion of the latter is always swallowed, and of course mixes with the other fluids of the digestive organs. But we are persuaded, that whoever

* Principles of Medicine, p. 354.

† Opera Citat. pp. 205-302.

will read with attention the experiments of Dr. B., and compare them with each other, must be convinced from them alone, that so far from the saliva being “perfectly non-essential” to digestion, it performs a very important part in facilitating the process.

We shall proceed now to give a sketch of the very interesting observations of our author in regard to various particulars connected with the physiology of the stomach, from the correctness of which we are happy to say, we shall have but few occasions to dissent.

Dr. Beaumont has proved with great clearness, that the gastric juice does not accumulate in the stomach in the intervals of digestion, as many physiologists, and Spallanzani among the number, have supposed; but is secreted only when food is admitted into the gastric cavity, or some other stimulus is applied directly to its lining membrane. This fact was pointed out long since by Chaussier, and more recently by the experiments of Tiedemann and Gmelin, and those of Leuret and Lassaigne.

When it does not contain food, Dr. B. has usually observed the stomach to be empty and contracted, the rugæ formed by its inner coats being irregularly folded upon each other, and almost in a quiescent state. The whole of the mucous membrane of the stomach when perfectly free from disease, is of a light or pale pink colour, of a soft velvet-like appearance, and covered constantly with a very thin transparent viscid mucus.

“Immediately beneath the *mucous coat* (?) and apparently incorporated with the villous membrane, appear small, spheroidal, or oval-shaped, glandular bodies, from which the mucous fluid appears to be secreted.”

If the mucus covering the inner coat of the stomach be wiped off with a sponge during the period of chymification, the mucous membrane appears roughish, and at first, of a deep pink colour, but in a few seconds the follicles and fine papillæ begin to pour out their respective fluids, which being diffused over the parts from which the mucus had been removed, restore to them their peculiar soft, velvet-like appearance and pale pink colour, and the gastric juice begins to trickle down the sides of the stomach. When the mucus is wiped off during the period the stomach is empty, a similar roughness and deepened colour are produced, though in a less degree. The follicles appear to swell more gradually, and the fluids are not secreted in sufficient quantity to trickle down, as during the period of chymification.*

* Dr. Beaumont speaks of wiping off the mucous coat or *membrane* of the stomach, (page 107,) and of the *mucous coat* being restored, (ibid. ;) these are

When the tongue is applied to the mucous coat of the stomach in the empty, unirritated state of the organ, no acid taste is perceptible, but whenever food or any other irritant is applied to the membrane so as to excite the gastric papillæ, an acid taste is immediately perceptible.

The ordinary temperature of the interior of the stomach during health Dr. B. has ascertained to be about 100° Fahr., as well in the intervals as during the process of digestion. There would appear, however, to be some difference in the temperature of different regions of the organ, it being somewhat higher at the pyloric than at the cardiac extremity. Variations in the state of the atmosphere were found in some of Dr. B's experiments, to affect the temperature of the stomach; a dry state of the atmosphere increasing, and a humid one diminishing it. Active exercise also was found to elevate invariably the temperature of the stomach, under all circumstances, about one and a half degrees.

When a portion of food is received into the stomach, the action of the vessels of its mucous coat become increased, the latter acquires a brighter red colour, the vermicular motions of the organ are excited, and the secretion of the gastric juice commences.

The latter appears to issue "from innumerable vessels, distinct and separate from the mucous follicles. These vessels, when examined with a microscope, appear in the shape of small lucid points, or very fine papillæ, situated in the interstices of the follicles." The gastric fluid, according to the observations of the author, is secreted in quantities exactly proportioned to the amount, and greater or less degree of solubility of the food admitted into the stomach, excepting when more is eaten than is necessary for the wants of the system. The fluid is either absorbed by the portion of aliment in contact with the coats of the organ, or collects in small drops, and trickles down the sides of the stomach, to the more depending parts, and there mingles with the food or whatever else the stomach contains.

"In febrile diathesis, or predisposition from whatever cause—obstructed perspiration, undue excitement by stimulating liquors, overloading the stomach

certainly only loose modes of expression; he cannot possibly have confounded the mucous tissue of the stomach with the mucus by which it is covered; and yet we might infer this from his language, especially when he speaks constantly of a villous coat independently of the mucous coat. We have marked in numerous parts of the work expressions in the highest degree inaccurate: thus, he speaks of "*nervous* or vascular papillæ" secreting the gastric juice, (pp. 103-4,) of glands constituting a part of "the erectile tissue of the stomach," (p. 58,) and of the "excretory ducts of the gastric vessels," (p. 104.)

with food—fear, anger, or whatever depresses or disturbs the nervous system, the villous coat becomes sometimes red and dry, at other times pale and moist, and loses its smooth and healthy appearance—the secretions become vitiated, greatly diminished, or entirely suppressed—the mucous coat (?) scarcely perceptible, the follicles flat and flaccid, with secretions insufficient to protect the vascular and nervous papillæ from irritation.

“ There are sometimes found on the internal coat of the stomach, eruptions, or deep red pimples, not numerous, but distributed here and there upon the villous membrane, rising above the surface of the mucous coat. (?) These are at first sharp-pointed and red, but frequently become filled with white purulent matter. At other times irregular circumscribed, red patches, varying in size or extent from half an inch to an inch and a half in circumference, are found on the internal coat. These appear to be the effect of congestion in the minute blood-vessels of the stomach. There are also seen at times, small aphthous crusts in connection with these red patches. Abrasions of the lining membrane, like the rolling up of the mucous coat (?) into small shreds or strings, leaving the papillæ bare, for an indefinite space, is not an uncommon appearance.

“ These diseased appearances, when very slight, do not always affect essentially the gastric apparatus (?) when considerable, and particularly when there are corresponding symptoms of disease, as dryness of the mouth, thirst, accelerated pulse, &c. no gastric juice can be extracted, not even on the application of alimentary stimulus. Drinks received, are immediately absorbed, or otherwise disposed of; none remaining in the stomach ten minutes after being swallowed. Food taken in this condition of the stomach, remains undigested for twenty-four or forty-eight hours, or more, increasing the derangement of the whole alimentary canal, and aggravating the general symptoms of disease.”

Dr. B. has observed that when a portion of food is received into the stomach, the rugæ of the latter gently close upon it, and, if sufficiently fluid, gradually diffuse it through the cavity of the organ, entirely excluding more during this action. The contraction ceasing, another quantity of food will be received in the same manner. It was found that when the valvular portion of the stomach in the subject of his experiments was depressed, and solid food introduced, either in entire pieces or finely divided, the same gentle contraction or grasping motion took place, and continued for fifty or eighty seconds, and would not allow of the introduction of another quantity until that period had elapsed, when the valve could be again depressed and more food put in. When the subject was so placed that the cardia could be seen, and then allowed to swallow a mouthful of food, the same contraction of the stomach and grasping of the bolus was invariably observed to commence at the œsophageal ring. Hence, when food is swallowed too rapidly, irregular contractions of the muscular fibres of the œsophagus and stomach are produced, the vermicular motions of the rugæ are disturbed, and the regular process of digestion is interrupted.

Contrary to the opinions of many physiologists, Dr. B. has ascertained that the solution of the food commences immediately after it is received into the stomach. Water, alcohol, and other fluids not containing alimentary matter in solution, pass from the stomach very soon after they are received, either by absorption or through the pylorus. Liquid albumen and albuminous fluids are first coagulated, and then dissolved by the gastric juice. Food taken in a liquid form combined with a large quantity of water, as soup, &c. is deprived by absorption of its aqueous portion before its digestion is commenced.

According to Dr. Wilson Philip, and the fact is confirmed by the experiments of Brodie, Broughton, Breschet, Edwards, and others, the digestion of the food commences first in the portion immediately in contact with the surface of the stomach, and as the thin layer of chyme there formed is removed by the muscular action of the organ, a second layer is chymified—digestion always commencing on the surface of the food. In reference to this opinion, Dr. Beaumont remarks:—

“That chymification commences on the surface of the food I have no doubt; but I apprehend this to be the case as it respects each individual portion, and not the whole mass.

“When a due and moderate supply of food has been received, it is probable that the whole quantity of gastric juice for its complete solution, is secreted, and mixed with it in a short time. If a tenacious mass of food be used, the external portion of the whole quantity is first acted on, digested, and succeeding portions presented, &c. From numerous examinations of the stomach, I feel warranted in saying, at least in the human subject, that there is a perfect admixture of gastric juice and food—that the particles of food are constantly changing their relations with each other.”

We would inquire, however, of Dr. Beaumont, whether he has ascertained positively that contact of the food with the coats of the stomach is not essential to its perfect digestion? The whole mass of food contained in the stomach may be pervaded by the gastric juice and solution go on equally in every part of it, but the question is, does a single particle become converted into perfect chyme that has not come in contact with the parietes of the digestive organ, so as to enable the absorbents of the latter to act upon it? From a careful consideration of all the phenomena of digestion, we feel no hesitation in asserting as our opinion, that chymification, strictly speaking, invariably takes place in that portion of the aliment which is applied to the inner surface of the stomach, and that it can take place nowhere else. It will not do for Dr. B. to reply that he has produced chyme by the action of the gastric juice on aliment out of the stomach, he must first show by a chemical analysis that the fully formed chyme as it passes into the duodenum, and the food after its solu-

tion, merely, by the gastric juice, are identically the same—and this he has not even attempted to do. That the absorbents of the stomach do act upon the aliment is proved by the fact, that a chylous fluid is formed by these vessels as well as by those of the intestines. This is shown by the experiments of Leuret and Lassaigne, and more recently by those of Voisin.

Dr. Beaumont having observed a large proportion of fluid in the stomach, even after a dry and solid meal had been eaten, presumes that a synthetic formation of water from its elements takes place in that organ. We need only remark that the supposition is in the highest degree improbable; whatever amount of fluid may be poured into the stomach during digestion, we have no right to refer it to any other source than the exhalants of the mucous membrane.

The stomach is not quiescent during the process of chymification. By the alternate contraction and relaxation of its transverse muscular fibres a peristaltic motion is produced, which commences soon after the food is received, and causes the latter to revolve around the interior of the gastric cavity, from point to point and from one extremity to another.

“The ordinary course and direction of the revolutions of the food,” according to our author’s observations, “are first, after passing the œsophageal ring, from right to left, along the small arch; thence, through the large curvature, from left to right. The bolus as it enters the cardia turns to the left, descends into the splenic extremity, and follows the great curvature towards the pyloric end. It then returns, in the course of the smaller curvature, to perform similar revolutions.”

These revolutions are completed in from one to three minutes. They are, however, slower at first than after chymification has considerably advanced.

The motions of the stomach not only produce the revolutions of the food just referred to, but, by a kind of agitation or *churning* of the contents of the organ, cause the particles of the aliment to be separated from each other and intimately mixed with the gastric fluids.

“There is nothing,” remarks Dr. B. “of the distinct lines of separation between the old and new food, and a peculiar central or peripheral situation of crude as distinguished from chymified aliment, said to have been observed by Philip, Magendie, and others in their experiments on dogs and rabbits, to be seen in the human stomach; at least in that of the subject of these experiments. The whole contents of the stomach, until chymification be nearly complete, exhibit a heterogeneous mass of solids and fluids; hard and soft, coarse and fine, crude and chymified; all intimately mixed, and circulating promiscuously through the gastric cavity, like the mixed contents of a closed vessel, gently agitated or turned in the hand.”

We suspect, however, that this commixture of the different contents of the stomach, noticed in the experiments of our author, must, in some measure, have been owing to the manner in which he extracted them for examination; namely, “by depressing the valve within the aperture, shaking a little, and pressing upwards.” The firm compression which the stomach exerts upon its contents, would, of itself, be sufficient to force the more fluid portions to the surface, and unless some such separation does take place we cannot conceive how the digested food is carried off, by the muscular actions of the stomach, through the pylorus, while that which has not undergone the process of chymification is retained. On two occasions Dr. B. would seem to admit, that the digested and undigested portions of the aliment occupy different portions of the gastric cavity. Thus, at page 142:—

“It is possible,” he remarks, “that the portion, (of aliment) presented at the perforation, may be in a more advanced stage of digestion than the rest of the mass, and consequently lighter, and float on the surface of the more solid portions of the food. In ordinary cases such would be found to be the case.”

And again, at page 144:—

“It may be inferred from this experiment, (the 26th,) that the more perfectly chymified portions of food rise to the superior part of the stomach, as suggested in a preceding observation, and are consequently exposed at the perforation, from whence parcels are taken for experiment and examination.”

According to Dr. Wilson Philip’s observations, when food has been taken at different times, the new is never mixed with the old. Dr. Beaumont, however, conceives that this statement is not correct, but that in a very short time the food already in the stomach and that subsequently eaten become combined.

“One thing,” he remarks, “is certain, and it is capable of demonstration in the stomach of the subject of these experiments, that old and new food, if they are in the same state of comminution, are readily and speedily mixed in the stomach.”

The ordinary time required for the complete digestion of the food received into the stomach, during a healthy state of the organ, Dr. B. has ascertained to be about three hours and a half. The facility of digestion is modified, however, by many circumstances, as idiosyncrasies, habit, the nature of the food and the manner in which it is prepared. Minuteness of division of the aliment and tenderness of its fibre, would appear to be the two great essentials for its speedy and easy digestion.

“Albumen, if taken into the stomach, either very slightly or not at all coagulated, is perhaps as rapidly chymified as any article of diet we possess. If

perfectly formed into hard coagula by heat or otherwise, and swallowed in large solid pieces, it experiences a very protracted digestion. Fibrine and gelatine are affected in the same way. If tender and finely divided, they are disposed of readily; if in large and solid masses, digestion is proportionably retarded."

Animal fat is very quickly and invariably rendered fluid by the heat of the stomach, and, together with every species of oily food, resists for a long time the action of the digestive organ and its fluids. Dr. B. has observed that when the use of fat or oily food has been persevered in for a long time, there very generally takes place an admixture of bile with the gastric fluids, and from numerous experiments he has been led to believe that this admixture of bile has the effect of facilitating the solution of such kinds of aliment.

"Bulk is, perhaps, nearly as necessary to the articles of diet as the nutrient principle. They should be so managed that one should be in proportion to the other. Too highly nutritive diet is probably as fatal to the prolongation of life and health, as that which contains an insufficient quantity of nutriment."

Solid aliment Dr. B. has observed to be sooner disposed of by the stomach than fluid; he conceives, also, that its nutritive principles are sooner carried into the circulation. The correctness of the latter proposition is however very doubtful; the very fact, admitted by the author, that exhaustion from abstinence, namely, is more quickly removed by liquid than by solid food, would certainly seem to disprove it.

An incipient state of putrefaction, sufficient to render the muscular fibre slightly tender, was found to increase the digestibility of most kinds of flesh.

Vegetable aliment, generally speaking, he discovered to be slower and more difficult of digestion than animal. Its solution in the stomach is greatly influenced, however, by division and tenderness of fibre. Crude vegetables often pass through the pylorus in an undigested state, while other food is retained and fully digested.

The thorough mastication of the food is essential to healthy digestion.

"If aliment," remarks the author, "in large masses be introduced into the stomach, though the gastric juice may act upon its surface, chymification will proceed so slowly, that other changes will be likely to commence in its substance before it will become completely dissolved. Besides, the stomach will not retain undigested masses for a long time without suffering great disturbance."

Consequently, eating too fast impedes digestion, by introducing food into the stomach in a state unprepared for the actions of that organ and of its fluids. If food, also, be swallowed too rapidly more

will in general be taken into the stomach, before the sense of hunger is allayed, than can be digested with ease.

Overloading the stomach with aliment was invariably found to interfere with the regular process of chymification; a portion remaining for a long time undigested. This very soon becomes rancid or runs into acetous fermentation, and if not rejected by vomiting, causes pain and irritation of the stomach and other distressing symptoms; or it is permitted to pass into the intestines, where its presence almost invariably gives rise to colic, flatulence, or even more dangerous affections.

The reason why too large an amount of food is injurious, is supposed by our author to be, because "the quantity of gastric juice, either contained in its proper vessels, or in a state of preparation in the circulating fluids, is believed to be in *exact proportion* to the proper quantity of aliment required for the due supply of the system." Hence, if more food than is necessary be taken, a part of it must consequently remain undigested. We have no evidence, however, that the solvent fluid secreted by the stomach is furnished only in a certain amount; it appears to us more probable, that when too large a quantity of food is eaten, it causes an undue distention of the stomach, and in this manner prevents its regular and healthy actions from going on: while, at the same time, most generally the food is swallowed faster than the gastric juice is secreted, and in a state unfitted to be acted upon by it.

Condiments, according to our author, though they may at first excite the action of a debilitated stomach, yet when used habitually, never fail to produce indirect debility of that organ, and in this manner impede digestion.

"Salt and vinegar are exceptions, and are not obnoxious to this charge when used in moderation. They both assist digestion—vinegar, by rendering muscular fibre more tender—and both, by producing *a fluid having some analogy to the gastric juice*."

Alcoholic, and Dr. B. thinks probably all artificial drinks, impede more or less the digestive process; some more so than others; "but none can claim exemption from the general charge. Even coffee and tea, the common beverages of all classes of people, have a tendency to debilitate the digestive organs." In the correctness of these opinions we most heartily and fully concur.

Our author has found, from numerous trials, that moderate exercise, so far from interrupting digestion, conduces greatly to its healthy and rapid performance. Severe and fatiguing exercise, however, always retards digestion.

It is stated by most physiologists, that during digestion the stomach becomes a centre of fluxion; but against the use of such an expression Dr. Beaumont strongly objects; it being one, as he declares, to which no definite meaning can be attached. We confess that we were somewhat surprised at this assertion; we have repeatedly employed the same expression ourselves, and really did believe that we were conveying to all our readers who were any way conversant with medical language a definite idea; namely, that more blood is determined to the stomach during the period of digestion than when the functions of that organ are not in exercise. That the stomach really does become a centre of fluxion when digestion is going on, is proved by the observations which Dr. B. has himself recorded. He tells us, that, during digestion, the action of the vessels of the mucous membrane is increased, that the colour of the latter is of a brighter red, and that a very copious secretion takes place from its follicles and papillæ—that all this is occasioned by an irritation of the membrane resulting from the presence of the food; and further, that gentle exercises increases the circulation in the vessels of the stomach and the temperature of the latter, and in this manner facilitates digestion.

“As the food becomes more and more changed from its crude to its chymified state, the acidity of the gastric fluids is considerably increased; more so in vegetable than in animal diet; and the general contractile force of the muscles of the stomach is augmented in every direction; giving the contained fluids an impulse towards the pylorus.

“It is probable that from the very commencement of chymification—from the time that food is received into the stomach, until that organ becomes empty, portions of chyme are constantly passing into the duodenum, through the pyloric orifice, as the mass is presented at each successive revolution. I infer this from the fact, that the volume is constantly decreasing. This decrease of volume, however, is slow at first; but is rapidly accelerated towards the conclusion of digestion, when the whole mass becomes more or less chymified. This accelerated expulsion appears to be affected by a peculiar action of the transverse muscles, or rather of the *transverse band*, as described by Spallanzani, Haller, Cooper, Sir E. Home, and others, in their experiments on animals. This band is situated near the commencement of the more conical shaped part of the pyloric extremity, three or four inches from the smaller end. In attempting to pass a long glass thermometer tube through the aperture, into the pyloric portion of the stomach, during the latter stages of digestion, a forcible contraction is first perceived at this point, and the bulb is stopped. In a short time there is a gentle relaxation, when the bulb passes without difficulty, and appears to be drawn forcibly, for three or four inches, towards the pyloric end. It is then released, and forced back, or suffered to rise again; at the same time giving to the tube a circular, or rather spiral motion, and frequently revolving it completely over. These motions are distinctly indicated, and strongly felt, in holding the end of the tube between the thumb and finger; and it requires a

pretty forcible grasp to prevent it from slipping from the hand, and being drawn suddenly down to the pyloric extremity. When the tube is left to its own direction, at these periods of contraction, it is drawn in nearly its whole length, to the depth of ten inches; and when drawn back, requires considerable force, and gives to the fingers the sensation of a strong *suction* power, like drawing the piston from an exhausted tube. This ceases as soon as the relaxation occurs, and the tube rises again of its own accord three or four inches, when the bulb seems to be obstructed from rising further; but if pulled up an inch or two through the stricture, it moves freely in all directions in the cardiac portions, and mostly inclines to the splenic extremity, though not disposed to make its exit at the aperture. Above the contracting band, and towards the splenic portion of the stomach, the suction or grasping motion is not perceptible; but when the bulb is pushed down to this point, it is distinctly felt to be grasped, and confined in its movements. These peculiar motions and contractions continue until the stomach is perfectly empty, and not a particle of food or chyme remains, when all becomes quiescent again.

“If the bulb of the thermometer be suffered to be drawn down to the pyloric extremity, and detained there for a short time, or if the experiment be too frequently repeated, it causes severe distress, and a sensation like cramp or spasm, which ceases on withdrawing the tube, but leaves a sense of soreness and tenderness at the pit of the stomach.

“These peculiar contractions and relaxations succeed each other at irregular intervals, of from two to four or five minutes. Simultaneously with the contractions, there is a general shortening of the fibres of the stomach. This organ contracts upon itself in every direction, and its contents are compressed with great force. During the intervals of relaxation, the rugæ perform their vermicular motions, and the undulatory motions of the fluids continue.

From the foregoing facts, Dr. B. draws the following conclusions; namely, that—

“The longitudinal muscles of the whole stomach, with the assistance of the transverse ones of the splenic and central portions, carry the contents into the pyloric extremity. The circular or transverse muscles contract progressively from left to right. When the impulse arrives at the *transverse band*, this is excited to a more forcible contraction, and closing upon the alimentary matter and fluids contained in the pyloric end, prevents their regurgitation. The muscles of the pyloric end now contracting upon the contents deposited there, separate and expel some portion of the chyme. After the contractile impulse is carried to the pyloric extremity, the circular band and all the transverse muscles become relaxed, and a contraction commences in a reversed direction from right to left, and carries the remaining contents again to the splenic extremity, to undergo similar revolutions.”

“After the expulsion of the last particles of chyme, the stomach becomes quiescent, and no more (gastric) juice is secreted, until a fresh supply of food is presented for its action, or some other mechanical irritation is applied to the internal coat (of the organ.)”

We have inserted the preceding quotations, notwithstanding their

length, in consequence of the highly interesting view which they present of the muscular actions of the stomach during digestion. The opportunity which the author enjoyed for studying them with care, precludes any doubt as to the correctness of his observations.

We come next to the consideration of a very important question; what, namely, are the changes produced in the food by the process of chymification? That solid food is dissolved in the stomach, we have now most abundant proof, and that most kinds of aliment undergo other and still more important changes, we have very strong reasons for presuming. But whether these changes consist merely in the breaking up of the union which existed between the proximate principles of the food, in the separation of such as are adapted for the formation of chyle from the recrementitious particles, or in an actual alteration in its chemical composition, are questions which still remain undecided. Not the least information in relation to them can be gleaned from the experiments and observations under review.

Chyme, or the product of stomachic digestion, is generally described to be a homogeneous, grayish paste, of a slightly acid taste; its acidity was found by Tiedemann and Gmelin to be greatest when the food is the most difficult of digestion. According to the observations of Dr. B. in its homogeneous appearance the chyme is invariable, but not in its colour, this being affected in a slight degree by the kind of food from which it is produced.

“It is always,” he remarks, “of a lightish or grayish colour, varying in its shades and appearance from that of cream to a grayish or dark-coloured gruel. It is also more consistent at one time than at another; modified in this respect by the kind of diet used. This circumstance, however, does not affect its homogeneous character. A rich and consistent quantity is all alike, and of the same quality. A poorer and thinner portion is equally uniform in its appearance. Chyme from butter, fat meats, oil, &c. resembles rich cream. That from farinaceous and vegetable diet has more the appearance of gruel.—It is invariably distinctly acid, and possesses properties different from the elements of which it is composed.”

A series of microscopic examinations of the chyme are furnished by the author; they lead, however, to no satisfactory conclusions in regard to its real character and composition.

It will, no doubt, be anxiously inquired, whether, by the experiments and observations of Dr. Beaumont, all the agents concerned in the process of digestion have been determined? To this inquiry, the reply must be in the negative. Excepting so far as relates to the

solvent powers merely of the gastric juice, they leave every thing in relation to the efficient cause of digestion in the same doubt and obscurity in which it was previously involved. Dr. B. it is true, infers from the result of his experiments, that the gastric fluid is the sole agent by which the food is converted into chyme; but until he shall be able to prove that fully-formed chyme, in the state in which it passes into the duodenum, and the fluid mass which results from the action of the gastric juice alone upon the food, are in all respects identically the same, and that the absorbents of the stomach do not act upon the dissolved aliment presented to their orifices, we must be permitted to consider his opinion in regard to the uses of the gastric juice as a mere hypothesis, the facts in support of which are still to be made out. Even the proposition with which the work before us closes, namely, “that *no other* fluid produces the same effect on food that gastric juice does, and that it is the *only solvent* of *aliment*,” he is very far from having established. Tiedemann and Gmelin, as well as Leuret and Lassaigne, maintain, as the result of their experiments, that the mucus of the intestines possesses equally with the gastric juice the power of dissolving the food and converting it into a substance similar to chyme, and the fact is supported by the later observations of Voisin. The latter gentleman relates a number of experiments which prove that the gastric juice is not essential to the perfect digestion of alimentary substances. Of these experiments we present the following summary:—1st. Food triturated and mixed with saliva, when introduced into the small intestines of an animal, was in two or three hours as completely chymified as though the process had been performed in the stomach. 2d. Food of a moderate consistence, without any preparation, introduced into the upper portion of the small intestine of an animal, the communication between the intestine and stomach being cut off by the passage of a ligature, became perfectly chymified. Chyle as well as fæces were also formed. A dog was nourished in this manner for a month, and then killed. 3d. Food introduced into the cœcum, the ileo-cœcal valve being closed by a ligature, was, at the end of four hours, found to be sensibly changed, and presented some of the characters of chyme.

The fact is, the absorbents of the stomach and alimentary canal generally, perform a much more important part in the process of digestion than is commonly supposed. Doubtless the saliva, the gastric fluids, and even the bile and pancreatic juice, all, under ordinary circumstances, facilitate in a very great degree the conversion of the food into chyme and the formation of chyle; but to no one nor to all

of them are we inclined to ascribe any further agency in the process of digestion.

A number of experiments were performed by Dr. B. to ascertain, if practicable, the effects produced by the bile and pancreatic juice, when added to chyme. These experiments are acknowledged by the author to be very imperfect, and to lead to no positive conclusions. In the general summary, nevertheless, of the inferences which he conceives to be deducible from his experiments and observations is the following, namely, "that chyme is formed in the duodenum and small intestines, by the action of bile and pancreatic juice on the chyme." It is hardly necessary for us to enter into a refutation of this assertion. No physiologist, so far as we are aware, states that he has ever *seen* chyle in any part of the cavity of the intestines, while many, after performing numerous experiments to determine the fact, have declared that chyle never exists out of the lacteals, a conclusion which is now almost universally adopted. That the bile and pancreatic juice, particularly the former, are not by any means essential to the formation of chyle is conclusively established by the facts adduced by the German and French experimenters so frequently alluded to in this review, and which, likewise, very clearly point out the manner in which Brodie and Mayo were led into the erroneous conclusion that when the choledochus duct is tied in animals no trace of chyle can be detected in the lacteals. The recent experiments of Voisin prove, also, that chyle is formed notwithstanding the obliteration of the common duct of the liver and gall-bladder. With these remarks, we take our leave of this portion of Dr. Beaumont's work.

Before concluding, we have a remark or two to make in reference to our author's explanation of the cause of hunger. Dr. B. maintains, that the quantity of gastric juice necessary for the solution of just so much food as is required for the due support of the system is prepared during the intervals of digestion, and, just before a meal, fills and distends its proper vessels, ready to be poured into the stomach the moment food is swallowed; and that the sensation of hunger is produced by this distention or repletion of the secernent vessels of the stomach by the gastric fluid.

We might reply to this hypothesis by asking the author for the evidence by which the correctness of his premises is established. Is it established satisfactorily, that the gastric juice is secreted previously to the stimulus of food being applied to the coats of the stomach, and only in a certain definite amount? Or can it be proved that a distention of the "gastric vessels," as Dr. B. terms them,

does really exist whenever the sensation of hunger is experienced, and that the intensity of the latter is in exact proportion to the degree in which these vessels are loaded with the solvent fluid? We shall certainly be excused if we refuse our assent to the author's explanation of the cause of hunger, until the above points are clearly made out. But in the absence of any fact which bears directly upon them, we conceive that from the author's own experiments the incorrectness of his views in this particular may be shown. 1st. If there is in fact an exact relation between the quantity of the gastric juice in its proper vessels, and the quantity of aliment demanded by the wants of the system, how is it possible that the subject of our author's experiments could take into his stomach a full meal, a very short time after Dr. B. had drawn off one or two ounces of the juice, and yet digestion be regularly and promptly performed without being in the least affected by the loss of so considerable a portion of the proper solvent fluid. 2dly. If hunger depend upon the distention of certain vessels of the stomach by the gastric juice, how comes it that an hour or two before the least sensation of hunger was experienced, the author was able to draw off a large amount of gastric juice from the stomach, without the appetite of the patient being prevented from occurring at his regular meal-time, while in other instances, immediately preceding a meal a very small quantity of the juice was with difficulty procured, and yet the usual amount of food being taken immediately afterwards, its digestion was effected without the slightest unusual delay or difficulty. 3dly. How does the author's theory of the cause of hunger comport with the following fact. In experiment 64, page 207; three drachms of gastric juice were extracted from the stomach, and in fifteen minutes afterwards the young man ate four ounces of pure gelatine prepared with boiling water, which was almost entirely digested at the end of an hour, when a breakfast of pork and bread was taken with the usual degree of appetite. Thus, notwithstanding the unloading of the distended vessels by the extraction of three drachms of gastric juice, and by that which was poured into the stomach to dissolve four ounces of gelatine, it appears that the ordinary natural appetite of the subject was in no degree destroyed.

In many persons appetite for food is destroyed by allowing the usual period of a meal to pass by without eating, and in most individuals it is almost instantly dissipated, and even the food already taken prevented from being digested, by sudden emotions of the mind, disgust and other sensations. These facts, it is true, may be explain-

ed in conformity with the views advanced by our author, by supposing an immediate absorption, in such instances, of the gastric juice discharging the vessels, and a suspension for a time of its further secretion; but we have no evidence either that distention of the gastric vessels or absorption of the gastric juice contained in them takes place. If we were to presume that distention of the gastric vessels produces the sensation of hunger, and that when aliment is not taken into the stomach at regular periods the gastric juice is absorbed, prolonged abstinence, whatever effects it may produce upon the system, should never give rise to that craving for food, that extreme hunger, which we know is the most tormenting phenomenon by which it is attended.

There are many other points embraced in the work before us which we should like to have noticed, had our limits permitted, but we must now draw our remarks rapidly to a close.

We have presented, so far as we were able in the space allotted to this review, a clear, and we trust satisfactory, view of the labours and opinions of the author. We have acknowledged the importance of the facts established by his experiments and observations, and given him credit for the perfect candour with which his opinions have been formed; we have taken the liberty, however, to dissent from the latter whenever we believed them to be unsupported by sufficient evidence, or in opposition to the facts already in our possession.

The experiments and observations of Dr. Beaumont cannot fail to be favourably received by the members of the profession, as affording, in very many particulars, a valuable addition to their knowledge of the physiology of certainly one of the most important organs of the animal system, and as a means of facilitating the inquiries of future experimenters into the true nature and cause of chymification.

In the event of a second edition, which will no doubt be speedily called for, a careful revision of his text will enable the author to remove those inaccuracies and obscurities of style with which the present is replete.

D. F. C.

ART. XIV. *On the Influence of Physical Agents on Life.* By W. F. EDWARDS, M. D., F. R. S., Member of the Royal Academy of Sciences, and Royal Academy of Medicine of Paris, of the Philomathic Society of the same city, and of the Medical Society of Dublin, &c. Translated from the French, by Dr. HODGKIN and Dr. FISHER. To which are added, in the Appendix, *Some Observations on Electricity*, by Dr. EDWARDS, M. POUILLET, and LUKE HOWARD, F. R. S.; *On Absorption, and the Uses of the Spleen*, by Dr. HODGKIN; *On the Microscopic Characters of the Animal Tissues and Fluids*, by J. J. LISTER, F. R. S. and Dr. HODGKIN; and *Some Notes to the work of Dr. Edwards.* London, 1832. 8vo. pp. 488.

THE original of the valuable work before us was given to the world many years ago, but being composed in a foreign tongue, the important experiments and deductions which it contains were communicated but partially through the journals of the period, and as every page teems with useful and interesting information a small portion only of its contents could be laid before the profession in that way. Drs. HODGKIN and FISHER have consequently rendered a real service to the profession, by the publication of an English version. Many of the chapters were read at different times to the Academy of Sciences of Paris, and obtained for Dr. EDWARDS, who is an Englishman by birth, but was educated in Paris, and has resided there for the greater part of his life, the honourable distinction of the physiological prize.

“It is certainly to be regretted,” says Dr. Hodgkin, “that our philosophical countryman has not himself exhibited his instructive work in an English dress, that our medical literature might have the credit of possessing it as an original rather than as a translation. Translations are generally inferior to original publications. In the present instance I have endeavoured to reduce the weight of this objection by submitting the translation to the author’s perusal, and he has kindly supplied me with some fresh matter, which will be found in the Appendix. Whilst I feel justified in expressing myself as I have done with respect to the original work, to which I have to acknowledge the obligation of much important assistance in practice, I must confess myself very differently circumstanced with regard to the translation.

“To suit the convenience of English students, who have in general neither time nor inclination for voluminous reading, Dr. Fisher and myself have laboured, as far as possible, to compress the work without omitting a single experiment or conclusion. This, however, has been no easy task, as Dr. Edwards’s own method of exposing the subjects of which he treats is in general too con-

cise to admit of abbreviation, without incurring the risk of producing obscurity." Preface, p. vi.

As it is not probable that the work will be republished in this country, we shall endeavour to lay before the reader such an analysis as may serve as a useful succedaneum; although it is impossible, in the space to which we must necessarily be confined, to embrace every important topic, and to elucidate it in the happy manner of the author. They, however, who seek for further information, will have to provide themselves with the work itself, which will amply repay them for the trifling outlay.

The work is divided into four parts, according to the animals experimented on:—1. *Batrachian reptiles*. 2. *Fishes and reptiles*. 3. *Warm-blooded animals*: and 4. *Man and vertebral animals*. The two last are obviously of more interest to us; but the deductions from all aid materially in solving the great problem of the influence of physical agents on animal life. We shall therefore briefly refer to the most prominent results contained in the two first parts, and dwell more at length on those classes which are more closely related to man, and on the phenomena presented by man himself.

I. *Batrachian reptiles*.—The first topic of inquiry in this class of the animated kingdom is into the phenomena of asphyxia; and especially, whether the medium, in which it may take place, has any peculiar influence independently of that which is exerted on the lungs. Of the media, the most important are air and water; and as reptiles have the power of living a considerable time after the heart has been removed from the body, the respective influence of these media can be readily appreciated. By the removal of the heart, the circulatory and respiratory functions are annihilated; the nervous and muscular systems are alone left, and these are inseparably connected. Now, by placing reptiles, whose hearts had been removed, in air and in water, and observing how long they continued to live, a comparison could be drawn of the influence of these media on the nervous and muscular systems, independently of that which they exert on circulation and respiration. This experiment was performed on salamanders, frogs, and toads.

Two salamanders, deprived of their hearts, were placed in water of the same temperature, which had been deprived of air by boiling; and two in air. One of the former died in eight hours, the other in nine; whilst those in air lived from twenty-four to twenty-six hours. The experiments were repeated with similar results; whence Dr. Edwards infers, that air, in comparison with water, has a superior vivifying in-

fluence upon the system of those animals, independently of its action by means of circulation and respiration.

Similar experiments on frogs furnished analogous results. Those in water lived two hours, those in air three.

“If a frog, thus deprived of its heart, and immersed in water, be drawn out, and exposed to the air, at the moment when all signs of life have disappeared, it immediately begins to recover. If it be again plunged in water, all appearance of life instantly ceases; and it may thus be made, several times alternately, to lose and recover its motion and sensibility.” “This,” adds the author, “confirms, in a striking manner, the vivifying effect of air, and the deleterious influence of water on the nervous system.” p. 10.

It is more probable, however, that the effect is exerted on the contractility of the muscular fibre. NASSE has shown that water has the effect of destroying the irritability of muscles; and Dr. JOHN K. MITCHELL found, that when water was thrown into the heart of a *Tesudo serpentaria*, or *snapper*, it was strongly stimulated, but its substance looked pale and hydropic, and in one minute action was destroyed beyond recovery.

In these experiments, the functions of the nervous and muscular systems alone remained; but in ordinary asphyxia, circulation continues in those animals, although respiration has necessarily ceased.

M. Edwards now attempted to ascertain the comparative duration of life in frogs whose hearts had been cut out, and in those in which they were left untouched. By placing these in water deprived of air, the latter in some instances lived twenty hours longer than the former; so that even the circulation of venous blood is favourable to the action of the nervous and vascular systems. This is strikingly illustrated in cholera, in which the activity of the nervous system, and its power over the muscles, were exemplified after nothing but dark blood was circulating in the vessels.

An interesting experiment was now made by strangling a number of frogs, by means of a ligature passed round the neck. At first they were paralyzed, but they afterwards recovered to a great degree, and lived from one to five days. The resistance to the ordinary sources of death, in the case of the amphibia, is most singular. Here we have them subsisting for days, although strangled; and DUMERIL had a salamander which survived decapitation long enough for the wound to cicatrize.

It would seem, then, from the experiments of Dr. Edwards, that the batrachian reptiles can live for many days by the aeration of the

blood which is effected through the skin, and by the action of the air on the nerves distributed to the cutaneous envelope.

That the blood is acted upon by the air was satisfactorily proved by the quantity of carbonic acid exhaled from the surface of the body, when strangled frogs were placed in receivers containing atmospheric air—a fact clearly showing the existence of *cutaneous respiration* in them.

In a former number of this Journal* we referred to certain experiments that were instituted by Professor BUCKLAND, connected with the well-known fact of the capability possessed by toads of living for a considerable length of time without air. Dr. Edwards is disposed to think, that in all the instances on record, of toads having been found imbedded in blocks of stone, there was probably some crevice, forming a communication between the external air, and the cavity containing the animal; but this, we think, is not proved. In the experiments of our author, he found that toads,—and the same remark applies to frogs and salamanders,—lived longer in sand or plaster than in air, owing, he conceives, and we think properly, to the cutaneous transpiration being more abundant in the air than in the solid substances, so that they exhaled, in the former case, the quantity of water that was necessary to their existence, and consequently expired.

In some of M. Edwards's experiments on the duration of the life of frogs inclosed in plaster, they did not survive more than six weeks; but HERISSANT affirms, that he kept them alive for eighteen months.

All the results of the experiments were materially modified by various circumstances, and one of the most important of these was the temperature of the medium in which the animal was placed. It was found, that as the temperature of the water of immersion was reduced, the duration of the life of the frogs was extended, until at 32° Fahrenheit, or the freezing point of water—it was more than tripled. On the other hand, the elevation of temperature caused a corresponding abbreviation of life, until, at 108° Fahrenheit, or about the natural temperature of warm-blooded animals, death was almost immediate.

“At the freezing point the animal did not become torpid, but it was less active; whilst the elevation of temperature aroused it to great agility.” p. 17.

These results apply only to the asphyxiated animal. The frog, whose respiration is free, may live in warm climates in water at 108°.

It appears, too, that *season* has a manifest influence on the dura-

* For May, 1833, p. 133.

tion of life;—first, by the temperature of the water in which the animals are immersed; and secondly, by the influence of the temperature of the air for some days previous to the experiment; and when these circumstances are combined the effect is doubled.

“On the 23d Nov. 1817, the air and water being at 10° cent. or 50° Fahr. and the mean temperature of the month being nearly the same; five frogs were placed in water at the same degree. They lived from 5h. 10' to 11h. 40'; the latter period being about double the duration of life of these animals in water at the same degree in summer. On the 22d Dec. the thermometer having been about 0° cent. or 32° Fahr. for twenty days, three frogs were put in water at 10° cent. or 50° Fahr.; they lived from twenty to twenty-four hours. On the 23d Dec. the temperature being still 0° cent. or 32° Fahr. four frogs were placed in water at 0° cent. or 32° Fahr. the same apparatus being employed as in the preceding experiments. They lived from twenty-four to sixty hours.” p. 20.

In the last experiment, consequently, they were placed in circumstances the most favourable for the prolongation of life under water.

The adult batrachians have only lungs,—organs adapted exclusively for atmospheric respiration. It becomes an interesting question, therefore, to inquire how they are influenced by the air contained in water, and whether they are not compelled, both in summer and winter, to come to the surface to breathe. M. Bosc informed Dr. Edwards, that he has seen the frog, during the winter season, quit the water for several days in succession, at a certain hour, and take breath for a short time on land; and if this be necessary in winter, when the animal is less active, it must be still more so in summer.

To prove how far they are really influenced by the air contained in water, our author first tried the effects of limited quantities of water; and he found that frogs lived from three hours and forty minutes to five hours and thirty minutes in boiled water, whilst others, in aerated water of the same temperature, lived from six hours and forty-three minutes to ten hours and forty minutes;—results which showed that the air in the water has a decided influence in prolonging the life of these animals within certain limits.

Another experiment proved most satisfactorily that frogs are truly amphibious, or capable not only of breathing the air of the atmosphere, but also of living exclusively on the air contained in water. By daily renewing stagnant water, a male frog, secured at the bottom of a glass vessel, was kept alive for more than two months and a half. Tadpoles can live in water without coming to the surface. They have, however, gills as well as lungs, and hence resemble fishes. They differ from the frog in not being able to live on land previous to the full development of their limbs.

The air contained in the water does not seem to act through the medium of the lungs. Inspiration in frogs is performed by a kind of deglutition, and is accompanied by very evident movements of the throat. In the atmosphere, these movements are repeated thirty or forty times in a minute; but when the animal is plunged in water they cease, and are not repeated; and if the lungs of the frog be examined no water is found in them, even when the immersion has been prolonged. The air must consequently act on some other organ than the lungs; and the skin is the only other organ in contact with the fluid.

The experiments, previously referred to, having established the fact of cutaneous respiration in the batrachians, Dr. Edwards next attempted to discover, whether these animals could continue to live, if permitted to breathe by the lungs alone, the atmosphere being altogether excluded from contact with the skin; and he inferred from his experiments, that—

“Pulmonary respiration is not sufficient to support the life of tree frogs, without being accompanied by the atmospheric influence upon the skin. The case is the same with the *rana obstetricans*, on which the experiment was also tried, and we may conclude, that the observation applies to all the batrachians. p. 41.

The attention of Dr. Edwards was next directed to the influence of the atmosphere on the *perspiration* of those animals. This he found to depend greatly upon the condition of the animal as to saturation; and accordingly the loss by perspiration differs greatly; but, taking the animal at the point of saturation or fulness, it is found to lose less and less by perspiration in a given time, in proportion as it removes from this point.

The quantity lost was found to depend greatly on the state of the atmosphere, as to rest and motion: when the wind was strong, the perspiration was quadrupled. It was to be expected likewise, that it should differ according to the hygrometric state of the atmosphere. Air, saturated with moisture, did not seem to prevent perspiration altogether, although it reduced it to its minimum. We do not think, however, that Dr. Edwards's experiments on this point were altogether satisfactory. The animal was suspended in a glass vessel, inverted over water, in which it would by no means follow, that the air should be saturated with moisture. The function of transpiration being one of depuration, must of necessity go on whether the air is saturated or not. In dry air, the loss was from five to ten times greater than in air of extreme humidity, according to the degree of dryness and the duration of the experiment.

As to the relative influence of different degrees of temperature upon the quantity of perspiration, it was much less than was anticipated. During five hours, the quantity perspired at 68° Fahr. was scarcely twice what it was at 32° Fahr. and that at 104° Fahr. was seven times greater than at 32° Fahr.;—thus resembling the effects obtained from a dry and still, compared with a humid atmosphere.

Another important topic of inquiry was, how the weight of the body is influenced by the contact of water with its external surface? That water was absorbed was manifest, and the weight of the body was found to increase or diminish, according as either of the antagonist functions of absorption and transudation exceeded the other. At 32° Fahr. the absorption predominated; at 86° the transpiration. Thus much, as regards the batrachian reptiles.

II. *Fishes and reptiles.*—The first stage of the life of batrachian reptiles, or the tadpole state, is so peculiar as to have induced the author to consider it under this head. The chief peculiarity consists in their possessing two kinds of respiratory organs—lungs and gills.

“Tadpoles unite in regard to respiration, the functions of reptiles with those of fishes; their use of them varies, not only according to their development, but also according to their physical conditions, under the influence of which we are now about to consider them. The tadpole has, in common with the adult animal, the power of supporting life through the medium of the skin, by means of the air contained in water. It has already been shown, that the limits of temperature in which the adult animals are able to exist, are 32° and 50° Fahr. or 0° and 10° cent.; and that beyond the higher limit, the greater part were obliged to have recourse to atmospheric respiration; but tadpoles, having an additional organ, by which they are enabled to avail themselves, in a higher degree, of the vivifying influence of the air contained in water, ought, we would imagine, to support, under water, a much greater elevation of temperature, without having recourse to the external air. That this is actually the case, is shown by experiments in which they were kept a long time in vessels with the water occasionally changed, and in running water, at the temperature of 25° Cent. or 77° Fahr.” p. 52.

The most important of Dr. Edwards's inquiries was into the influence of physical agents on the transformation of the tadpole into the frog. This is known to be expedited by a due supply of nutritious matter, and to be retarded when the supply is scanty.

The effect of temperature is also signal. If the tadpole is produced late in the summer, the subsequent temperature not being sufficiently elevated, it passes the winter in the larva state, and does not quit it until the return of warm weather. The results of the experiments, instituted by our author, further showed, that if deprived of atmospheric respiration they would retain their original form under water,

if their nutriment were not too abundant, and the temperature were not too high; and that the difference of atmospheric respiration alone, joined to these circumstances, would determine the transformation. It will be seen afterwards, that privation of light has a great effect in retarding and modifying their development.

Experiments were made on *fishes* similar to those on the batrachian reptiles; and first, as regards the influence of temperature on their lives in water deprived of air. Comparative experiments were made on individuals of the same species, at temperatures varying from 32° Fahr. to 104°. The result was, that at the higher limit death was as speedy as in the case of the batrachians, and the duration of life was progressively greater in proportion as the temperature was reduced to the lower limit. It appeared, however, that the smaller and the younger the fish, the less capable was it of bearing an elevation of temperature. At 104° the small fish do not live more than two minutes, whilst the larger survive several minutes longer. These results only apply, however, to the case of fishes inhabiting water of the ordinary temperature of the climate. DE SAUSSURE, SONNERAT, BRUCE, ABEL, LAMARCK, and others, sufficiently show, that these animals may breed, and live in water of a much more elevated temperature. HUMBOLDT and BONPLAND saw them thrown up alive from the bottom of a volcano, the steam of which raised the thermometer to 210° Fahr.

His next inquiry was into the *influence of the temperature of aerated water in limited quantities in close vessels*, and from a number of experiments he deduced the following inferences; *first*, that the duration of life goes on increasing with an increase of the quantity of aerated water, the temperature remaining the same; *secondly*, that the same result takes place when, the quantity of water remaining the same, the temperature is lowered; and *thirdly*, that the duration of life remains the same, when, within certain limits, we increase or diminish at the same time both the temperature and the aerated water. p. 57.

The influence of temperature on fishes was found to resemble that on the batrachian reptiles. If a bleak (*Cyprinus alburnus*) be put into a vessel with a large mouth, containing five ounces and a half of aerated water, at 68° Fahr., in summer, it dies within a few hours; but when the temperature is lowered to 50° or 53° Fahr. and is kept at that point, the animal lives until its secretions are so abundant as to corrupt the water; and if the water be renewed every twenty-four hours, it lives in it almost indefinitely.

From all his experiments connected with this subject, the author
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deduces, that the more the temperature is raised beyond certain limits, the greater is the degree of influence of the air required for their support.

The experiments of SYLVESTRE and others had sufficiently shown, that atmospheric respiration has an influence on the life of fishes—that it tends to prolong their existence in water. It became interesting, however, to examine into the circumstances connected with their life in the air. When a fish is taken from the water, it dies in a few minutes, or in a few hours, according to the species; and hence it has been inferred, that fishes are incapable of living by atmospheric respiration, or that air in this form is unfit for their continued existence. From a series of well-devised experiments, it was further shown—

“That the life of fishes in the atmosphere depends on several conditions, of which the principal are, temperature; the capacity of saturation with water; the corresponding loss by perspiration from the trunk and gills; the quickness of this loss; the action of the muscles which move the gills; and the use which they make of their muscles to avail themselves of the action of the air upon the gills. In short, they come under the general law relative to the influence of the atmosphere on the life of vertebrated animals. As fishes seem to form an exception to this law, I have thought it necessary to show that they are so only in appearance. What has been here stated relative to the life of fishes in the atmosphere, is equally applicable to tadpoles, placed in the same circumstances. They die from the quantity of water which they lose by perspiration; and although their capacity of saturation is, at least, equal to that of frogs, since it varies between one-third and one-fourth of their weight, yet as their size is very small, and their perspiration rapid, on account of the delicacy of their skin, they soon lose that proportion of water, and in the experiments which I made, I found that they did not live more than four hours.” p. 64.

Similar experiments were made on lizards, serpents, and tortoises; in other words, on the saurian, ophidian, and chelonian reptiles, which showed, that as regards the action of the atmosphere, the general results are the same with all cold-blooded animals: modified, however, by the character of the external covering, as respects its porosity and thickness.

III. *Warm-blooded animals.*—This and the following part are possessed of more interest to us than those to which we have attended, and are more calculated to aid us in determining many important topics of physiological and pathological inquiry. The first chapter is on the *heat of young animals*.

It has been a universal opinion, owing to the circulation of young animals being more rapid, and the function of nutrition more active, that their temperature is much higher than that of adults. The opinion is not sanctioned by observation. When new-born animals are

examined, the temperature, if placed near the mother, is never found to be superior to that of the adult. But if when the temperature is from 50° to 68° Fahr. a new-born puppy be removed, and kept an hour or two from its mother, the temperature falls considerably, and continues falling, until, in the course of three or four hours, it stops at a very few degrees above that of the surrounding air. The heat begins to subside as soon as the separation takes place, and the diminution is not in the least retarded by furnishing the animal, from time to time, with milk. So that it would appear, from these and other experiments, that the young animal, of certain species at least, produces less heat in a given time than the adult. As it advances in life, the diminution, under the circumstances mentioned, takes place more slowly, and to a less and less extent; until, at the end of a fortnight, it will maintain itself at a degree nearly equal to that of the parent. The new-born puppy would seem, consequently, to resemble the cold-blooded, rather than the warm-blooded animal, the characteristics of the latter being acquired gradually.

The same phenomena were found to take place with kittens and rabbits, but not with the young of all the mammalia—with the young Guinea-pig for example. The young of the mammalia seem, therefore, to be divided into two groups, in relation to animal heat; some being born, as it were, cold-blooded; others warm-blooded.

Now, corresponding to this difference, there appears to be another, deducible from the state of the eyes. Some are born with the eyes closed; others with them open; and until the eyes are opened they resemble the cold blooded-animal; those that are born with the eyes open being warm-blooded from birth.

“Thus,” says Dr. Edwards, “the state of the eyes, though having no immediate connexion with the production of heat, may yet coincide with an internal structure influencing that function, and certainly furnishes signs which serve to indicate a remarkable change in this respect; since, at the period of the opening of their eyes, all young mammalia have nearly the same temperature as adults.” p. 70.

Analogous results were obtained in the case of young birds,—the experiments being all admirably arranged, so as to prevent the existence of any source of fallacy,—but here again a difference was perceptible in different birds, some being, like the young Guinea-pigs, capable, as soon as they are extruded, of maintaining an elevated temperature, if exposed to the air in a favourable season. None, however, have the power of preserving their temperature, when the season is very severe, owing to the young possessing to an inferior degree the power of producing heat.

We may conclude, then, that the power of producing heat, in warm-blooded animals, is at its minimum at birth, and increases successively, according to our author, until adult age.

The singular phenomena of *torpidity*, which has engaged the attention of so many physiological naturalists of eminence, could not fail to attract that of Dr. Edwards. The hibernating animals—as the bat, hedgehog, dormouse, garden dormouse, and the marmot, possess all the characteristics of the mammalia, and are distinguished from the others only by their hibernation; during the existence of which they are converted, for the time, into cold-blooded animals;—their temperature being scarcely higher than that of the surrounding atmosphere; their respiratory movements irregular, feeble, and at long intervals; and no nourishment being taken during the whole period, which continues for several months.

The attention of observers—of SPALLANZANI, HUNTER, MANGILI, DE SAISSY, and others—has been principally bestowed on these animals during the period of hibernation; upon the mode of resuscitating them, as it were, and of again throwing them into torpidity. The researches of M. Edwards were directed chiefly to the phenomena connected with their temperature, which seem to influence all the others.

The spring and summer temperature of these animals has been found equal to that of many other mammalia, $98^{\circ}.6$ of Fahr.; but the following experiment of M. Edwards, essentially resembling some performed by M. De Saissy, shows that they produce less heat.

In April, 1819, the air being at 61° Fahr. an adult bat, of the long-eared species, recently taken, in good condition, and at the temperature of 93° Fahr. was placed in an earthen vessel, which was cooled by a mixture of ice and salt, till the air within was reduced to $33^{\circ}.8$ Fahr. The vessel had a cover, which allowed a free communication with the external air. After the animal had been there for an hour, its temperature was reduced to 57° F.;—a loss in this short space of time of 36° F. Guinea-pigs and adult birds, placed in the same circumstances, lost, at the utmost, not more than two or three degrees, although the influence of the cold was prolonged, in their case, to compensate for the difference of size.

Hence it appears, that bats produce less heat than animals which do not hibernate. To this cause must be ascribed the reduction of their temperature during the cold season; and it applies to all hibernating animals as well as to the bat.

From this inquiry the transition was natural to that,—whether in the opposite seasons of winter and summer, warm-blooded animals,

not hibernating, presented any difference in regard to their power of producing heat? This was to be ascertained by placing animals of the same species in the same conditions of refrigeration in winter and summer, and observing whether their temperature diminished unequally.

“It is necessary,” says M. Edwards, “in the first place, that the animals selected should be as similar as possible, and that the experiments should be sufficiently numerous to obviate any considerable influence from individual diversities. In order that the mode of refrigeration should be the same, attention must be paid, not only to the temperature, but to the humidity of the atmosphere; for a difference in the hygrometric state of the air would produce a corresponding difference in the evaporation from the lungs and skin, and consequently in the quantity of heat lost.

“The apparatus consisted of glass vessels, of the capacity of two pints, placed in a freezing mixture of salt and ice. The air, thus cooled, is at its point of saturation with moisture. When it is at zero cent. or 32° Fahr. the animal is introduced, and placed on a false bottom of gauze, to prevent the contact of the cold glass. A lid covered with ice is placed over the vessel, but so as to permit change of air for the free exercise of respiration; and, in order more effectually to secure the purity of the air, a concentrated solution of caustic potass is placed at the bottom, to absorb the carbonic acid, which it readily does, through the gauze.” p. 82.

The general results were as follows:—In the month of February the experiment was made, at the same time, upon five adult sparrows. In the course of an hour, they lost, on an average, $7^{\circ}.2$ Fahr., some having lost none; others only $1^{\circ}.8$ Fahr. Their temperature then remained stationary, until the end of the experiment, which lasted three hours. In July the same experiment was tried on four others. Their temperature, in the course of the first hour, sustained an average loss of $6^{\circ}.5$ Fahr.; at the end of the third hour the average reduction from their original temperature was 10° Fahr. In another series of experiments on six sparrows, in the month of August, the mean loss of temperature, at the end of the first hour, was $2^{\circ}.9$; and after three hours $8^{\circ}.76$:—experiments which would seem to show, that continued elevation of temperature diminishes the power of producing heat, whilst an opposite state of the atmosphere, provided the cold be not too severe, increases it.

The hope of producing such a change in animals as might enable them to support the privation of air for a much longer period than is natural to them, and to become aquatic animals, led BUFFON to the discovery of a singular fact connected with young animals. He placed a greyhound bitch, of the large species, when on the point of giving birth to young, in a tub of warm water, and secured her in

such a manner that she was obliged to bring them forth under water. These were afterwards, for the sake of nourishment, transferred to a smaller tub of warm milk, but without giving them time to breathe. They remained there for above half an hour, after which they were taken out, and all found alive. They began to breathe, which they were permitted to do for half an hour, and were then again plunged in the milk, which had been warmed again in the mean time. There they remained for another half hour, and when they were again taken out, two were quite strong, and seemed not to have suffered at all. The third appeared drooping, but was carried to its mother, and soon recovered. The experiment was continued on the other two: they were allowed to breathe a second time for about an hour; and were then plunged once more in the warm milk for half an hour, after which they appeared as strong as before. Being taken to their mother, however, one of them died the same day, whether by accident, or from the privation of air, could not be ascertained. The other lived as well as the first; and both throve as well as the other puppies produced after the bitch was removed from the water, and which had not been experimented upon.

Some similar experiments were made by LE GALLOIS on rabbits, which would favour the belief, that the duration of the life of new-born mammalia, under such circumstances, is about half an hour. Yet M. Edwards was surprised to find, that the Guinea-pig, at birth, when plunged in water, lived only three or four minutes longer than the adult, and in other animal species the difference was not greater. On inquiring into the causes of this difference, he found that those animals which, when asphyxiated, give signs of life for half an hour, are the very species that possess feeble powers for the production of heat—new-born dogs, cats, and rabbits, for example. It was before observed, that these animals, at this period of existence, strongly resemble fishes, and these facts show that they resemble them further in the power of sustaining privation of air. On the other hand, Guinea-pigs are in the class that produce most heat at birth, and of these the author says he has never seen one which lived above seven minutes under water.

“We have seen,” says M. Edwards, “that at the end of the fifth day the duration of life during asphyxia is reduced one-half: now this reduction corresponds to a sensible elevation of their temperature. The same is the case after the second interval of five days; the heat is then much increased, and the power of living without respiration is considerably diminished. Lastly, when they have arrived at the fifteenth day, a period when they usually have a temperature nearly equal to that of adults, they scarcely differ from them in the duration of

asphyxia. If, instead of passing at once from the first to the fifth day, we examine the young animals in the intervening days, we shall find, that during the first and second, and even not unfrequently the third, the duration of asphyxia is only very slightly altered. The production of heat corresponds with this, and both phenomena likewise concur in the more rapid and striking change that quickly after takes place.

“We see that the distinction formerly pointed out between young mammalia, founded in the production of heat, is applicable to them, also, in respect to the duration of life, when deprived of respiration. This duration has its maximum in the group of mammalia which produce the least heat at birth, and its minimum in those which produce the most.” p. 88.

The external temperature has likewise an influence on the duration of asphyxia in these cases. Some kittens, when a day or two old, were subjected to water, cooled to 32° Fahr.; they ceased to give signs of sensibility and motion after four minutes and thirty-three seconds, taking the mean of nine experiments. At a temperature of 50° Fahr. the duration of life extended to ten minutes and twenty-three seconds; at 68° , to thirty-eight minutes and forty-five seconds. At 86° , however, they lived but twenty-nine minutes, and at 104° , but ten minutes and twenty-seven seconds;—so that there are two principal conditions which influence the life of warm-blooded animals when deprived of air; namely, the quantity of heat developed by the animals themselves, and the external temperature to which they are exposed.

In his experiments upon the respiration of this class of animals, M. Edwards found that the young are capable of living much longer than the adult in the same quantity of air; and consequently, that their consumption of the air in respiration is comparatively less. So that the adult animal, whose power of producing heat is great, consumes more air than the young animal, whose calorific powers are less. Here, again, a difference existed between Guinea-pigs and puppies. The latter were removed from the confined space at the end of four hours and fifty-nine minutes, the former after an hour and forty-two minutes. A recollection of the fact, that young puppies at birth produce much less heat than Guinea-pigs, will explain the apparent anomaly.

It was before remarked, that the power of producing heat in warm-blooded animals, is greater in winter than in summer; and the experiments of M. Edwards showed that the consumption of oxygen is more rapid in the former season.

The researches of our author on the *perspiration* or *exhalation* of warm-blooded animals, led him to the following results:—

“That the successive losses by perspiration are subject to considerable varia-

tions and alternations of increase and diminution, when compared at short intervals, but constantly decrease when considered at longer periods. The periods during which the fluctuations takes place in vertebrated animals generally, may be pretty accurately determined. We have always observed, in warm-blooded animals, the alterations to take place with intervals of an hour, and this term may be regarded as a general rule. On examining the whole series of experiments upon vertebrata of different classes, it was observed that the shortest intervals within which the successive diminution took place were those of two hours, and the longest, nine. In taking a mean of six, we may hope to include almost all the cases, for even when a longer space of time was necessary, three hours were sufficient to determine a diminution, if not constant, at least with little variation. In the greater number of cases, it took place in successive intervals of three hours." p. 105.

The main results were found to be conformable to those obtained on cold-blooded animals. In the former, however, the perspiration was found to be six times greater in dry than in moist air. The influence of air in motion, and air at rest, on the function of perspiration, was found to be analogous to that experienced in the cold-blooded animal.

IV. *Man and vertebrate animals.*—The effect of various physical influences on these upper classes of created beings are of most moment to us, although nothing can be more instructive to the scientific anthropologist than an investigation of similar influences on animals lower in the scale; from which, by invoking a wise analogy, inferences may be drawn that tend largely to elucidate many obscure phenomena presented by man himself.

"The results," says our author, "obtained in my experimental inquiries into the influence of physical agents on other warm-blooded animals have been so uniform, that they may, by analogy, be extended to man, although he can scarcely be made the subject of the experiments themselves, and for this reason was not mentioned in the preceding part." p. 112.

The first chapter of this division is *on the modifications of heat in man, from birth to adult age*; and here we observe, at once, the striking analogy to the warm-blooded animals in general. It was before stated, that those which are born with the eyes closed, lose their heat when they are exposed to the air in spring or summer, almost as rapidly as cold-blooded vertebral animals; whilst those whose eyes are open at birth, under similar circumstances, preserve a high and constant temperature. In accordance with analogy, a new-born infant, at the full period, having the eyes open, should have the power of maintaining a pretty uniform temperature during the warm seasons; but if birth takes place at the fifth or sixth month, the case

is altered; the pupil is generally covered with the *membrana pupillaris*, which places the animal in a condition similar to that of closure of the eyelids in other animals. Analogy would induce us to conclude, that in such an infant the power of producing heat would be inconsiderable. Observation confirms this; although we obviously have not the same facilities, as in the case of animals, of exposing the young to a depressed temperature. On taking the temperature of twenty adults, it was found to vary from 96° to 99° Fahr. the mean being 97° ; whilst the temperature of ten healthy infants varied from 93° to 95° Fahr. the mean of the whole being $94^{\circ}.55$.

The temperature of a seven months' child, though well swathed, and near a good fire, was, within two or three hours after birth, no more than $89^{\circ}.6$ Fahr. Before the period at which this infant was born, the *membrana pupillaris* disappears; and it is probable, as Dr. Edwards has suggested, that if it had been born some time before the disappearance of the membrane, its power of producing heat would have been so feeble, that it would scarcely have differed from that of mammalia born with the eyes closed.

These facts suggest another most important object of inquiry, regarding the *influence of cold on mortality at different periods of life*. If the faculty of evolving heat differs, vitality will be correspondingly modified; and the temperature of the atmosphere has to be guarded against by proper precautions, especially where the capability of evolving heat is feeble.

Now, as this capability is less in the infant at birth than it is subsequently, it requires the assistance of external warmth more than it does subsequently, and it is probable that contact with the mother, so strongly suggested by the maternal feelings and instincts, is essential to the due maintenance of the vital energies.

The following experiments are full of interest in this point of view.

"On 12th February 1819, a kitten, newly littered, removed from its mother, and exposed to the air, at the temperature of 14° cent. or 51° Fahr. being cooled down in nine hours to 18° cent. or $64^{\circ}.4$ Fahr. became stiff, and almost incapable of executing the slightest movements.

"The following month the air of the room being 10° cent. or 50° Fahr., I exposed two kittens, of one day old, and having a temperature of 37° cent. $98^{\circ}.6$ Fahr. In 2h. 25, the temperature of one was reduced to 17° cent. or $62^{\circ}.6$ Fahr. and that of the other to 18° cent. or $64^{\circ}.4$ Fahr. They had become stiff and almost insensible.

"In the month of January in the same year, four puppies littered the day before, were of the temperature of 35° to 36° cent. or 95° to 97° Fahr. The air of the room was 11° cent. or 52° Fahr. The cooling which they underwent

from nine in the morning till ten at night, lowered their temperature to 13° and 14° cent. or $55^{\circ}.4$ and 57° Fahr. They were then so enfeebled that they were almost motionless.

“The symptoms of weakness and suffering soon after the young animals are exposed to the air, increases as their temperature sinks. The same circumstances occur with those young birds which produce the least warmth when hatched.

“Although the diminution of temperature thus occasioned by exposure to the air, would ultimately prove fatal to these young animals, it is remarkable how long they are capable of enduring a considerable reduction of temperature. New-born puppies or kittens may live two or three days at a temperature of 20° cent. or 68° Fahr. and even 17° or 18° cent. or $62^{\circ}.6$ or $64^{\circ}.4$ Fahr. But the air must not be too cold, or they would soon be deprived of sense and motion, and in a short time this apparent death would become real. When they appeared on the point of expiring, I easily restored animation by placing them before the fire or by immersion in a bath. These means, if promptly applied, may even prove effectual when they are quite motionless, and, to all appearance, dead.” p. 119.

It appears, then, that these animals bear a considerable reduction of their temperature, but they must not be left too long in the state of reduction; and due care must be taken in the restoration of warmth. If the exposure be too often repeated, or too long continued, it is fatal; and the facility of recovery after great reduction of temperature, does not continue in the same degree in the progress of life. The reduction of bodily temperature is therefore less injurious in its permanent effects, in proportion to the youth of the animal.

It has been observed, that in young warm-blooded animals, the capability of supporting reductions of temperature is inversely proportionate to their power of producing heat, and this appears to be a wise provision of nature; for whatever care may be taken by parents of their young, they cannot always remain with them to maintain their temperature at a high degree, if they belong to the class of animals that are born with closed eyes, or without feathers.

“As soon as they leave them to provide subsistence, the temperature of their young begins to be reduced, and if this reduction were as injurious as it is to those animals which produce more heat, the greater part would perish.” p. 121.

The following is a general review of the facts relative to the influence of cold at the different periods of life.

“We must distinguish two things—the cooling of the body, and the temperature capable of producing it. The cooling of the body, without regard to its cause, is less injurious in proportion to the youth of the animal. Lower the temperature of two animals of the same species an equal number of degrees, the young will suffer less, and will recover more perfectly. But, in order to lower the temperature of animals of different ages, different degrees of external

cold will be necessary, being lower, the nearer the animal is to adult age. If, on the other hand, young animals suffer less from the same reduction of warmth, on the other hand, they cool more readily. It is on this last circumstance, that the mortality in warm-blooded animals, at different periods of life from birth to adult age, principally depends, so far as it is the result of the influence of external cold." p. 122.

When the momentary application of cold is frequently repeated, the power of producing heat becomes enfeebled, and it takes some time for the organs of calorification to recover their power: on the other hand, after exposure to cold sufficient to diminish the power of producing heat, continuance in a high temperature tends to the recovery of this power, for on exposing animals to successive applications of cold, their temperature is found to fall the more slowly the longer they have been subjected to the influence of warmth. Hence, persons who are liable to frequent exposure to severe cold, are rendered more capable of supporting it, by subjecting themselves, in the intervals, to an elevated temperature. The transient application of heat consequently occasions effects, which are continued beyond the time of the application, and it operates whenever the system stands in need of heat.

The experiments of Le Gallois, as well as those instituted by himself, have induced M. Edwards to infer, that there is always a certain ratio between heat and respiration in both the cold-blooded and warm-blooded animals; and in hibernating animals both in the periods of torpidity, and of full vital activity. When the eighth pair of nerves is cut in the young of the mammalia, a considerable diminution is produced in the opening of the glottis, so that in puppies, recently born, or one or two days old, so little air enters the lungs, that when the experiment is made in ordinary circumstances, the animal perishes as quickly as if it was entirely deprived of air. It lives about half an hour. But if the same operation be performed upon puppies of the same age, benumbed with cold, they will live a whole day. In the first case, the author thinks, and plausibly, the small quantity of air is insufficient to counteract the effect of the heat; whilst in the other, it is sufficient to prolong life considerably; and he deduces the following practical inferences applicable to the adult age, and particularly to man.

"A person is asphyxiated by an excessive quantity of carbonic acid in the air which he breathes; the beating of the pulse is no longer sensible, the respiratory movements are not seen, his temperature however is still elevated. How should we act, to recal life? Although the action of the respiratory organs is no longer visible, all communication with the air is not cut off. The air is in contact with the skin, upon which it exerts a vivifying influence; it is also in

contact with the lungs, in which it is renewed by the agitation which is constantly taking place in the atmosphere, and by the heat of the body which rarifies it. The heart continues to beat, and maintains a certain degree of circulation, although not perceptible by the pulse. The temperature of the body is too high to allow the feeble respiration to produce upon the system all the effect of which it is susceptible. The temperature must then be reduced, the patient must be withdrawn from the deleterious atmosphere, stripped of his clothes, that the air may have a more extended action upon his skin, exposed to the cold, although it be winter, and cold water thrown upon his face until the respiratory movements reappear. This is precisely the treatment adopted in practice to revive an individual in a state of asphyxia. If instead of cold, continued warmth were to be applied, it would be one of the most effectual means of extinguishing life. This consequence like the former, is confirmed by experience.

“In sudden faintings, when the pulse is weak or imperceptible, the action of the respiratory organs diminished, and sensation and voluntary motion suspended, persons the most ignorant of medicine are aware that means of refrigeration must be employed, such as exposure to air, ventilation, sprinkling with cold water. The efficacy of this plan of treatment is explained on the principle before laid down.

“Likewise in violent attacks of asthma, when the extent of respiration is so reduced that the patient experiences suffocation, he courts the cold even in the most severe weather, he opens the windows, breathes a frosty air, and finds himself relieved.” p. 149.

As a general rule, an elevated temperature accelerates the respiratory movements, but the degree of temperature requisite to produce this effect, is not the same in all. The object of this is, that more air shall come in contact with the lungs in a given time, so as to reanimate what the heat depresses.

In young animals, especially such as are born without the power of maintaining their temperature in the open air, as soon as they are exposed to cold the respiration increases in rapidity and extent, and their temperature begins to fall. They present, according to our author, the phenomena of an attack of *febris algida*, and this state is quickly fatal, if not remedied by renewing the heat of the body.

“Although the acceleration of respiration is a powerful means of counteracting the effects of cold, by extending the contact of the air with the organs best adapted to feel its vivifying influence, this acceleration has its limits: it may diminish, but cannot compensate for the effects of excessive cold.

In the progress of life, however, these young beings are less and less affected in their respiratory movements by the same temperature, until it ultimately has no influence over them, so that in adult age, the rapidity of their respiratory movements is much less subject to be influenced by external temperature: yet in them, if the cold be carried sufficiently far, an acceleration takes place in the respiratory

movements, until, the powers being exhausted, these movements, like all the others, languish, and fail.

From these and other facts, it would seem to follow, that when an individual experiences a change of constitution, which diminishes his production of heat, or consumption of air, he cannot endure that degree of cold, which previously would have been salutary to him, without experiencing, sooner or later, an alteration in the rate of his respiratory movements.

“Hence the necessity, when these two functions have experienced this alteration, as in cases of organic affection of the heart and lungs, of placing the patient in communication with a milder temperature, either artificially, or by change of climate.” p. 156.

If an individual be kept quiet, and abstain from food, and sleep, his *perspiration* may be regarded as uniformly diminishing in each succeeding period of six hours:* in some a longer period may be necessary, in others a shorter. In some, M. Edwards thinks, successive diminution of perspiration may be observed in periods of three hours, but this he considers to be the minimum. The period of the greatest perspiration, when no obstructing cause exists, is generally, according to him, from the hour of rising in the morning—say six o’clock—till noon, and the losses are successively less in similar intervals, for the remainder of the twenty-four hours.

The hygrometric condition of the atmosphere, the state of motion and rest of the air, and the pressure of the atmosphere, have the same influence over this function in man as in animals.

Dr. Edwards, however, considers that these conditions affect only the insensible perspiration, or that which is produced by *evaporation*; but they do not produce sweat, which he regards as a process of *transudation*; thus making, with HALLER, the insensible and sensible perspirations two distinct functions, although it appears to us there is not sufficient ground for the distinction. The insensible perspiration he looks upon as a purely physical phenomenon, whilst the sensible “is a loss ordinarily produced by a vital action, in the form of a liquid which transudes;” but even were we to admit the difference, the altered characters of the air might exert a decided effect on the cutaneous capillaries that are charged with the secretion. If the air, for example, be loaded with moisture, the perspiration cannot pass off, but accumulates on the surface, and under such circumstances it

* These periods are chosen to obviate the influence of the constant fluctuations that are observed in the amount of the perspiration at short intervals.

is probable, that the activity of the vital operation would be less than where it can readily be exhaled as it is formed. The vessels of the skin we regard as depuratory organs, like the kidneys, and we think this applies to them as organs of the insensible as well as of the sensible transpiration. It cannot be denied, however, that a certain extent of evaporation of fluids may take place in the living as well as in the dead body, and the loss, produced in this way, must be added to that experienced through the function of perspiration.

On the effect of suppression of perspiration M. Edwards expresses himself in a rational and sound manner. It has always appeared to us, that this has been too blindly invoked as a cause of disease; and that the morbid influence, in such cases, is rather to be ascribed to the induction of irregular action of capillaries, extending its morbid effects to other portions of the frame, than to any check given to the cutaneous transpiration.

“All that we have hitherto shown on the subject of perspiration will considerably facilitate our examination of a question which naturally presents itself. Is perspiration susceptible of being suppressed? It is easier to resolve this question with regard to man and other warm-blooded animals, than with respect to the cold-blooded vertebrata. Let us see what is the result of a very low temperature upon warm-blooded animals. We know, by the effect of cold upon the sweat, that it diminishes transudation. Now let us suppose that it may, by its intensity, suppress it altogether, there will remain perspiration by evaporation which will always take place however humid the air may be. The high temperature of man and other warm-blooded animals, warms the air in contact with the body, and changes its hygrometric state by removing it from its extreme of humidity, and consequently occasions evaporation. If, on the other hand, the temperature of the air be raised to an equality with that of the body, at the time that it is saturated with humidity in order to suppress evaporation, then perspiration by transudation is excited, and takes place to such an extent in man and other warm-blooded animals, that the sweat will stream from all parts of the body. We can then in no case suppress their perspiration; it will be performed either by evaporation or by transudation. We ought therefore to be careful how we take literally what we find in medical books respecting suppressed perspiration. There can be no such thing. That there may be suppression of sweat, is evident to every one; but it does not follow that even in these cases there is no transudation.

“Since it is difficult to assure ourselves directly whether transudation is ever entirely suppressed in man and other warm-blooded animals, let us see what the cold-blooded vertebrata will offer on this point.

“The batrachians are the best adapted to this kind of researches, on account of the nakedness of their skin, of the fineness of its texture, of the copious loss which may be incurred through its medium, and consequently of the relation which their perspiration bears to that of man.

“On exposing frogs to the temperature of 0° cent. 32° Fahr. in humid air, in

order to suppress perspiration by evaporation, they have lost by transudation, in different experiments, the 30th part of their weight. Transudation is more abundant in these animals than in man, though the latter be placed in circumstances much more favourable. When we consider how sensible these creatures are to cold, how much the activity of all their functions is diminished at a low temperature, and how much they may even then lose by transudation, it is not to be supposed that cold suppresses this mode of perspiration in man, and the less so from his having a temperature of his own which varies very little with the changes of the atmosphere, a condition which has a powerful tendency to maintain transudation. It may be very much diminished by the action of cold but it appears that it cannot be altogether suppressed.

“It is a remarkable, but well-known fact, that when life is sinking, and to appearance nearly extinct, the body is covered with sweat—so strong is the tendency to continue this function.”

Lastly, as the author has properly remarked, if the body were immersed in a denser medium than air—in water, for instance, supposing that it had no physiological action on the skin, it would merely prevent the contact of the air, and consequently suppress evaporation; but the vital action of the perspiratory vessels would continue, although we cannot think to the same extent, as in the air; but the deficient depuration would probably be made up by exhalation from the lungs and kidneys.

On the question, whether absorption of water takes place through the skin in man, M. Edwards is in the affirmative. He has no doubt, too, that it is readily effected when the body is placed in humid air. The experiments on this subject by SANCTORIUS, SEGUIN, ROUSSEAU, &c. are sufficiently discrepant, but still we think enough has been done to demonstrate, that cuticular absorption is not easy; and that one of the great uses of the cuticle is to obviate the evils that might result, provided it were more readily effected. Yet the lizard, whose skin is scaly, after having lost weight by exposure to the open air, recovers its weight and plumpness when placed in contact with water, and if the scaly skin of the lizard permits such absorption, Dr. Edwards thinks it is impossible not to attribute this property to man.

The experiments of Seguin and Rousseau exhibit, as we have remarked, that this is by no means easy, but we can readily conceive, from the facility with which water soaks through animal tissues, that if the animal body be immersed sufficiently long in it, and especially if the vessels have been previously drained, imbibition might take place to a considerable extent, until a state of healthy fulness were induced. But this would be a mere mechanical, or physical absorption, and could be effected in the dead body as well as in the living.

In the chapter on *Temperature*, in which is investigated the degree of heat that man and animals can endure, the author does not offer any new results. He notices the well-known effects, such as the acceleration of the pulse, and of respiration, the feeling of greater or less heat, &c.

The power of maintaining the heat with but slight modifications, has been long admitted. The experiments of Sir CHARLES BLAGDEN, Dr. FORDYCE, Dr. FRANKLIN, and others, had sufficiently established it. The greatest elevation was experienced by MM. DELAROCHE and BERGER in their own persons. The temperature of the former was raised from $97^{\circ}.8$ to 106° by staying eight minutes in a stove, heated to 176° Fahrenheit. Experiments cannot, of course, be instituted on man to ascertain the highest degree his temperature can attain under the influence of excessive atmospheric heat; but M. Edwards considers, from the general results of experiments on warm-blooded animals, that he could not, under the influence of excessive heat, in a dry air, experience during life a higher rise of temperature than $12^{\circ}.5$ or 14° Fahrenheit.

The author assigns, with Delaroche and Berger, the agency of keeping down the temperature of animals, when exposed to heated air, to the evaporation which takes place from them. This, he thinks at least, would be sufficient, when the air has a temperature above that of warm-blooded animals, “but below this limit it would be incorrect to attribute to this cause, as is generally done, the real or supposed power of man, and other warm-blooded animals, to maintain uniformity of temperature under the vicissitudes of seasons, and climates.” p. 201.

On investigating the refrigeration or cooling in different media, at temperatures inferior to that of the body, M. Edwards found, as a general result, that the refrigeration was the same in humid as in dry air, whence it would follow, that the cold, produced by the greater evaporation in the dry air, was balanced by the cold resulting from the contact of the humid air. In air at rest, at a temperature inferior to that of the body, heat is lost in three ways; by evaporation, by contact, and by radiation. If the air be agitated, its radiation will not be affected; but the constant change of the air considerably increases the quantity of heat abstracted by contact, and this in a degree proportioned to the rapidity of the current. Evaporation is also augmented according to the velocity of the wind, and it is owing to these circumstances, that we have often a powerful sensation of cold, when the temperature may be the same, and the only change in the atmosphere may have been the greater velocity of its motion.

The fifteenth chapter contains novel and ingenious remarks on the influence of light upon the development of the body. Its influence on inorganic bodies and on vegetables being undoubted, M. Edwards conceived, that it might not be less manifested on animals. Its effect in producing those maniacal exacerbations, which occur at the full moon, and which have been generally ascribed to the direct agency of that luminary, is unequivocal. The *etiolation*, too, or blanching, perceptible in the countenances of the miner, and the civic resident, has been ascribed to its deficiency, but it is obviously difficult in these cases to distinguish the effect of the privation of light from other deleterious agencies that abound in such localities. Our author's attention was therefore directed to the effect of light on the development of animals; in other words, on those changes of form, which they undergo in the interval between conception and the adult age. He found, that absence of light manifestly retarded the transformation of the tadpole into the frog, and conversely that its presence favoured the development of form. His researches on this point led him to the following interesting and instructive inferences:—

“In the climates in which nudity is not incompatible with health, the exposure of the whole surface of the body to light will be very favourable to the regular conformation of the body. This application is confirmed by an observation of Alexander de Humboldt in his voyage to the equinoctial regions. Speaking of the Chaymas, he says: ‘Both men and women are very muscular, their forms are fleshy and rounded. It is needless to add that I have not seen a single individual with a natural deformity. I can say the same of many thousands of Caribs, Muyscas, and Mexican and Peruvian Indians, which we have observed during five years. Deformities and deviations are exceedingly rare in certain races of men, especially those which have the skin strongly coloured.’

“On the other hand we must also conclude that the want of sufficient light must constitute one of the external causes which produce these deviations of form in children affected with scrofula, which conclusion is supported by the observation that this disease is most prevalent in poor children living in confined and dark streets. We may from the same principle infer that in cases where these deformities do not appear incurable, exposure to the sun, in the open air, is one of the means tending to restore a good conformation. It is true that the light which falls upon our clothes, acts only by the heat which it occasions, but the exposed parts receive the peculiar influence of the light. Among these parts, we must certainly regard the eyes as not merely designed to enable us to perceive colour, form and size. Their exquisite sensibility to light must render them peculiarly adapted to transmit the influence of this agent throughout the system, and we know that the impression, of even a moderate light, upon these organs produces, in several acute diseases, a general exacerbation of symptoms.” p. 111.

The last chapter but one in the book is on the *Alterations in the*

Air from Respiration. On many topics, connected with this subject, much discordance has prevailed amongst observers. All, however, have remarked, that oxygen disappears, and carbonic acid is formed, but no agreement exists as to the mode in which these results are produced.

Two chief chemical hypotheses have been formed for this purpose. The one—that of BLACK, PRIESTLEY, LAVOISIER, and CRAWFORD—that the oxygen of the inspired air attracts carbon from the venous blood, and that the carbonic acid is generated by their union. The other, which has been supported by LAGRANGE, HASSENFRATZ, and others, that the carbonic acid is generated in the course of the circulation, and is given off from the venous blood in the lungs, whilst oxygen gas is absorbed.

The first section of the chapter in the work of M. Edwards is dedicated to an inquiry into the proportion of the oxygen that disappears to the carbonic acid produced. In Priestley's experiments, the latter seemed to have the preponderance. MENZIES, CRAWFORD, ALLEN and PEPYS, DALTON, PROUT, HENRY, and others, thought they were equal; LAVOISIER and SEGUIN estimated the oxygen, consumed in the twenty-four hours, to be 15661.66 grains; whilst the oxygen, required for the formation of the carbonic acid exhaled, was no more than 12924 grains; and Sir HUMPHRY DAVY found the oxygen consumed in the same time to be 15337 grains; whilst the carbonic acid produced was 17811.36 grains; which would contain 12824.18 grains of oxygen.

The experiments of Edwards show, that the discordance has not depended so much upon the different methods and skill of the experimenters, as upon other causes. He found, on comparing the results of individual experiments, a great difference in the proportion of the oxygen absorbed to the carbonic acid produced, ranging between rather less than a half, and one-sixth, but the quantity of carbonic acid produced was very uniform, when the circumstances were similar. He found also, that the variation depends upon the particular animal species subjected to experiment; upon its age, or on some peculiarity of constitution, and that it differs greatly in the same individual at different times.

The disagreement of experimenters, regarding the exhalation or non-exhalation of azote from the air, during respiration, is even greater than in the case of oxygen. PRIESTLEY, DAVY, HUMBOLDT, CUVIER, THOMSON, and others, found a less quantity exhaled than was inspired. SPALLANZANI, LAVOISIER and SEGUIN, VAUQUELIN, ALLEN and PEPYS, ELLIS, and DALTON, inferred, that neither absorption nor

exhalation takes place,—the quantity of that gas undergoing no change during respiration; whilst JURINE, NYSTEN, BERTHOLLET, and DULONG and DESPRETZ found an increase in the bulk of the azote. The inferences of our author are, that in a large number of cases the azote inspired and expired so nearly approaches to equality, that the slight difference may be disregarded, and exhalation rejected; and, that in a great number of other cases, the excess of azote is so considerable, that the exhalation of this gas cannot be denied, inasmuch as the quantity greatly exceeds the volume of the lungs, and bears a large proportion to that of the animal. The causes of these variations appear to be numerous, and ascertainable with difficulty.

The experiments of M. Edwards with regard to the exhalation of carbonic acid, ready formed, from the lungs, are very decisive. Spallanzani had affirmed, that when certain of the lower animals, as snails, are confined in gases that contain no oxygen, the production of carbonic acid is uninterrupted. On the strength of this assertion, our author confined frogs in pure hydrogen for a length of time. The result indicated that carbonic acid was produced, and in such quantity as to show, that it could not have been derived from the residual air in the lungs, as it was in some cases equal to the volume of the animal. Indeed, it occasionally amounted to five or six per cent.—considerably exceeding the bulk of the animal. The absorption of a considerable portion of hydrogen was also noticed.

The experiments were repeated on fishes, snails, and on kittens two or three days old, with similar results.

With respect to the source of the carbonic acid, M. Edwards concludes, that both in hydrogen and in atmospheric air, the carbonic acid is owing to exhalation, and that it proceeds wholly or in part from the blood, which has been proved to contain carbonic acid by VAUQUELIN, VOGEL, BRANDE, Sir EVERARD HOME, and others. When blood is placed in hydrogen, it exhales carbonic acid.

The following general views of the alterations effected in the air by respiration is given by the author:—

“The oxygen which disappears in the respiration of atmospheric air is wholly absorbed. It is afterwards conveyed, wholly or in part, into the current of circulation.

“It is replaced by exhaled carbonic acid, which proceeds wholly, or in part, from that which is contained in the mass of the blood.

“An animal breathing atmospheric air also absorbs azote; this is likewise conveyed wholly, or in part, into the mass of the blood.

“The absorbed azote is replaced by exhaled azote, which proceeds wholly, or in part from the blood.

“Here are four fundamental points:

“1st. The absorption of oxygen which disappears.

“2d. The exhalation of carbonic acid which is expired.

“3d. The absorption of azote.

“4th. The exhalation of azote.

“The two first relate to the oxygen, the two others to the azote.

“According to this view, respiration is not a purely chemical process, a simple combustion in the lungs, in which the oxygen of the inspired air unites with the carbon of the blood, to form carbonic acid, to be expelled; but a function composed of several acts. On the one hand there are absorption and exhalation, attributes of all living beings; on the other the intervention of the two constituents of atmospheric air, oxygen and azote.

“This view is not a preconceived idea, but a result to which we have been necessarily led by a multitude of facts.

“It exhibits to us animated beings drawing from the composition of the atmosphere two of their constituent principles.

“It furnishes us with numerous inferences, several of which are supported by facts already received in science.

“Thus the oxygen which disappears being absorbed, and the carbonic acid exhaled, the relative proportions are necessarily variable, from the nature of the two functions which must vary in the extent of their action. The fact is beyond doubt. They may vary in three ways. 1. The carbonic acid may be expired in smaller quantity than the oxygen which disappears; 2, in equal quantity; 3, in excess. The first is the ordinary case; the second is supported by the experiments of Allen and Pepys; the third, if it is not yet established, will probably be so hereafter. I might even say that it is so already, when we revert to the experiment of Allen and Pepys, relative to respiration in factitious air, composed of oxygen and hydrogen. The same observation applies to azote absorbed and exhaled.

“Let us return to the oxygen, and consider what becomes of it in the system. When it is absorbed and carried into the blood, there is every reason to believe, that it contributes to the formation of carbonic acid. But the experiments which I have already detailed prove, that it cannot be the only source of the gas contained in the blood.

“Since we have shown, that certain species of animals can exhale in a given time, as much carbonic acid in hydrogen, as in atmospheric air, there must be one or more subsidiary sources for the carbonic acid contained in the blood. It is easy to point out one. We know, from the researches of Jurine, Chevreul, Magendie, and others, that this gas exists in almost the whole extent of the alimentary canal. We cannot but admit, that it is formed in the process of digestion. It is in contact with almost the whole mucous surface of the alimentary canal, and a part must be absorbed. If any doubt of this were entertained, cases might be cited in which water impregnated with carbonic acid, and drunk in sufficient quantity, has produced symptoms of asphyxia. Doctor Desportes has communicated observations on this subject to the Royal Academy of Medicine.

“With respect to the oxygen which is to contribute to the formation of the carbonic acid contained in the mass of the blood, one of two things must happen. It enters into combination either suddenly or slowly. In the latter case there will be oxygen in excess, circulating in the mass of the blood. This pure

oxygen will therefore be subject to exhalation, which will take place in the organs adapted for giving passage to it, as happens in fishes, in the air bladders of which animals oxygen is found. I propose following up this subject, and examining different kinds of blood, in conjunction with M. Dumas." p. 244.

Not the least important portion of Dr. Edwards's work is the concluding chapter, relative to the *applications* of the deductions arrived at from the experiments detailed in the previous chapters; and the first he makes regards the faculty of producing heat. This faculty was shown to vary during health, and it varies still more in a state of disease.

The phenomena presented by torpid animals, and by the mammalia, and birds that are not torpid, leads Dr. Edwards to infer, that during the state of *natural sleep* there is a diminution in the power of producing heat; so that the application of cold, a damp and cold air, or a dry and piercing wind, which could be borne with impunity in the waking state, may act most injuriously during sleep.

The natural sleep of hybernating animals, he thinks, merits the denomination of *lethargic sleep*, from the remarkable diminution of temperature, respiration, and circulation, as well as of the external motions, and excitability of the senses, but similar changes he conceives may take place in man, so as to render his sleep lethargic, and he is disposed to believe in the instances of this kind of lethargic sleep, detailed in medical works,—affirms, indeed, that his own experience has convinced him that such cases do occur. We wish M. Edwards had detailed the cases. The instances of trance, lethargy, &c. of which there are so many on record, have certainly appeared to us sufficiently marvellous, and it would take all the weight of M. Edwards's facts and authority to alter our opinions upon the subject. At one time, it was universally believed, that substances could be administered, which might arrest the whole of the vital functions, or cause them to go on so obscurely as to escape detection, a notion which is embraced by Shakespeare, in his *Romeo and Juliet*:—

“Take then this phial,
And this distilled liquor drink thou off;
When presently through all thy veins shall run
A cold and drowsy humour, which shall seize
Each vital spirit, for no pulse shall keep
His natural progress, but surcease to beat.
No warmth, no breath shall testify thou livest,
The roses in thy lips, and cheeks shall fade
To paly ashes; the eyes windows fall
Like death, when he shuts up the day of life;
And in this borrow'd likeness of shrunk death,
Thou shalt continue two-and-forty hours,
And then awake as from a pleasant sleep.”

No one, however, at the present day, believes in the existence of any such medicament.

2. In his second "application," he assimilates the effect produced upon young animals by refrigeration, to the defective power of producing heat in the *febres intermittentes algidæ*, described by TORTI, in which the power is so far impaired, that the patient dies in the cold stage, at the end of two or three paroxysms, if suitable remedies be not employed.

"3. Since the application of external heat tends to reanimate the power of producing it, this means may be substituted for the extraordinary efforts of the system, which tend to the same object. It may be done either to prevent them, or to shorten their duration."

4. From the experiments, connected with dry and moist air, he considers, that damp cold must tend to produce, in individuals whose power of developing heat is rather feeble, the series of actions which constitute the accession of an intermittent fever, especially if they are exposed to that influence during sleep. Such a state of the atmosphere is, indeed, a great exciting cause of intermittents, provided a predisposition exists, derived from a malarious locality, but without this predisposition, the exciting cause might be applied in vain. In many parts of every country intermittents are unknown, notwithstanding the prevalence of winds of the character described.

5. Dr. Edwards transfers his results, connected with the influence of the seasons on the production of heat, to the question of the influence of climates, and as the animals, in his experiments, appeared to exhibit a summer and a winter constitution, he compares the former with that of the inhabitants of warm climates, and the latter with that of the inhabitants of cold climates; "but there will be this difference, that the modification which characterizes the summer constitution in our climate, will be much more strongly marked in warm climates."

Now, in individuals whose constitution is suited to the climate, there is a diminution of the power of producing heat in summer, and an increase in this respect in winter, whence he concludes, that this power will be feebler in the inhabitants of warm, than in those of cold climates, and consequently, when they change their climate, they must be, in general, less capable of supporting the cold, than the natives of the country.

6. In warm climates, a remedy is found for the excessive heat, in the increased evaporation which takes place, but its influence is considered to be exaggerated, when it is supposed that an exact compensation can be effected by it.

7. Does the temperature of man and of warm-blooded animals

vary according to the season? The general belief has been, that it is constant in the state of health and in ordinary circumstances, notwithstanding the heats of summer and the colds of winter. From several experiments, however, tried by our author on yellow-hammers and sparrows, at different periods in the course of the year, it would result, that the averages of their temperature ranged progressively from the depth of winter to the height of summer, within the limits of 5° or 6° Fahrenheit: and the contrary course was observed in the decline of the year. Hence he infers, and with every reason in his favour, that the temperature of man experiences a similar fluctuation.

8. The human temperature is rarely raised beyond 106° Fahrenheit, in the hottest of all diseases, scarlatina. Dr. JAMES GREGORY, of Edinburgh, used to assert, that he doubted the accuracy of the thermometer when a higher temperature was indicated. M. Edwards alludes to a case of tetanus, communicated to him by M. PREVOST, of Geneva, in which the temperature rose to $110^{\circ}.75$ Fahrenheit; so that if the healthy temperature of the child was $98^{\circ}.2$, here was a rise of $12\frac{1}{2}^{\circ}$, Fahrenheit.

9. To reduce this excessive heat, external agents of a suitable temperature are most effectual: damp cold, of all external means of refrigeration, tends best to diminish the activity with which heat is developed. Hence its value as a refrigerant in fevers, now universally acknowledged.

10. But if damp cold cannot be sufficiently prolonged, sponging with water of any temperature, provided it be not excessively hot, occasions a more abundant evaporation, and a salutary refrigeration, the effect of which is extended to other parts of the frame, by virtue of the extensive sympathy that exists between all parts of the capillary surface.

11. When the ventilation of an apartment is properly attended to, the quantity of heat is diminished, both by the contact of fresh portions of air, and by increased evaporation.

12. Excessive evaporation is injurious to man. The distress, experienced in the higher regions of the atmosphere—on the tops of mountains, or in balloons—is rather owing to this cause, perhaps, than to the rarefaction of the air, although the latter has its effects. In the celebrated aerial voyage of GAY LUSSAC, he found that the air contained, at the height of 23,000 feet, only one-eighth of the moisture necessary for its saturation. Owing to this cause, such an increase of evaporation takes place from the dermoid surface, under these circumstances, that the loss of fluid occasions a sensation of distress in the chest, proportionate to the desiccation.

“If, as frequently happens upon mountains, the weather change quickly, loading the air with humidity, the evaporation becomes moderate and the distress diminishes, or ceases entirely. If it still continue it is owing to the rarefaction of the air. The effect of evaporation is felt the first, and that which is owing to a want of air comes long after; it requires even a much greater height to produce it than one would be inclined to believe when the two sensations are confounded.

“Thirst is a symptom which attends the ascent of mountains. It is sometimes intense, when it cannot be ascribed to the fatigue of exercise. It is only momentarily satisfied, even by abundant and often repeated draughts. But if the air becomes charged with moisture, the thirst at the same time disappears. Here is an example perfectly analagous to that which we have elsewhere mentioned as the effect of a partial desiccation, although the body may be furnished with a sufficient quantity of water to prevent its losing its total weight, the distribution of the liquid to the different part not being in sufficient proportion to repair local loss. It is obvious that this influence will be very differently felt by different individuals, according to the state of the lungs.”
p. 260.

13. Dr. Edwards alludes to a symptom, connected with respiration limited by rarefaction of the air, which has not been usually noticed—a disposition to vomit. This has been observed during the ascent of great heights, and the author thinks the symptom, thus induced, may be connected with a great many others, in which respiration is limited in various ways, as in acute or chronic congestion of the lungs, “when the disposition to vomiting, and vomiting itself, are frequently symptoms arising from the diminution of the communication of the system with the air.”

14. Species and individuals vary greatly in their power of supporting limited respiration. It would not seem, that the limits, at which extreme rarefaction produces effects almost as rapid as those of the absolute privation of this fluid, differ greatly in warm-blooded animals. The pressure at which yellow-hammers were on the point of dying, corresponded, taking the average, to 5.31 inches of the barometer; the average for Guinea pigs, to 3.58 inches; and these animals presented the extreme results.

15. Facts, connected with excessive evaporation from the lungs, are observed in other than elevated regions. When, during a very sharp cold in winter, a room is warmed by means of a stove, a painful sensation in the chest is experienced by many. The air, in a frost, contains scarcely any watery vapour, and the heat of the stove, by raising the temperature of the air, increases its capacity for vapour, so that, at an equal temperature, the quantity of liquid dissipated by evaporation is much greater than in summer. To remedy this, in some

measure, we are in the habit of placing a vessel of water upon the stove, and it is advantageous.

“In arid districts,” says M. Edwards, “effects are ascribed to the heat of the air and of the wind, which arise, in a great degree, from the evaporation occasioned by the dryness of the atmosphere. Dr. Knox, who travelled in the interior of Africa, to the north of the Cape of Good Hope, has related to me facts, which justify this opinion.” p. 263.

16. In an agitated atmosphere, not extremely humid, evaporation, as a general rule, may be as great as in a calm and dry air; but if we suppose two states of the atmosphere in which the effects of motion in the one would equal those of dryness in the other, their respective influence upon evaporation would not be the same.

“Air in motion only acts upon exposed surfaces, as the integuments of the body; those of the lungs are sheltered, and notwithstanding their communication with the atmosphere, the agitation of the air has but a slight share in the quantity of vapour which they furnish. This consideration will serve to determine the choice of suitable places for the residence of delicate persons. Those to whom the increase of evaporation from the lungs is injurious, ought to prefer an atmosphere less dry, but slightly agitated, when it is important to obtain an agreeable freshness.” p. 264.

17. To remedy the dryness of the skin, and air passages, which acts most prejudicially, in the opinion of the author, in a great number of acute diseases, and for which drinking is insufficient, the atmosphere ought to be rendered moist by a sufficient evaporation of water, by which means the desiccation of the respiratory organs may be arrested.

18. The author properly inculcates the necessity of guarding children against the injurious impressions of cold in cold climates and seasons, by appropriate clothing, and he ascribes much mischief to a neglect of these precautions. Although the want of warm clothing is actually felt, its use is often declined from a wish to reserve it for an advanced age; but our author thinks it frequently happens, that this very precaution is the cause of preventing that age from being attained.

19. Clothing is insufficient to preserve the heat so as to maintain the existence of very young animals, and of infants born about the period when they begin to be *viable* or rearable. The continued external application of heat is demanded, until the body has acquired sufficient development; and the same remarks are applicable to every period of life, when the constitution, from any cause, approximates to the modification in question.

20. This “*application*” treats specially of the effects attributed to
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suppression of perspiration, of which we have already expressed our opinion.

21. If we compare the daily average of meats and drinks, during the course of a year, with the sum of all the losses by perspiration, and the alvine and urinary evacuations, it will be found that they are nearly the same. On taking the average results of observers, it is found that the proportion of urine to perspiration is, on the whole, about 1 to 1.08. The alvine evacuation forms but a small portion of the total loss, the mean of all the tables being four ounces.

“By subtracting this quantity from the sum of the meats and drinks, and taking the half of the remainder, we shall have an approximate result of the mean product of the perspiration of a day in the course of the year. In order to judge of the degree of approximation which may be attained, by making use of these data with the mere knowledge of the sum of meats and drinks, we give the comparison of the results furnished by experience, with those deduced by calculation from the preceding proportions.

“*Mean Losses by Perspiration in a Day.*

	Robinson.	Robinson.	Keill.	Rye.	Lining.
	42 yrs.	64.5 yrs.	39 yrs.	42 yrs.	40 yrs.
By observation, 45 oz.	27 oz.	30 oz.	56 oz.	60 oz.	
By calculation, 41	27	35	46	62	

It is found, that in temperate climes the mean perspiration in summer exceeds the urine; whilst in winter the contrary holds good.

In warm climates the average of perspiration for the year doubtless exceeds the average of the urine.

22. M. Edwards lays great stress upon the effect of slight agitation of the air, when the hygrometric state and temperature are adapted to the system: the chest, under such circumstances, dilates, and admits a large proportion of air; and he thinks that persons who have what is called delicate lungs, may owe in a great degree the difficulty and oppression which they feel to the smallness of their apartments; as the difficulty decreases on going into a large room, or into the open air; and he affirms, that whatever difference of purity may be attributed to the air of small and of large towns, of narrow and of wide streets, of town and of country, the degree of agitation of the air has the most marked influence on the extent to which the chest dilates; and the agreeable sensation, which is experienced on breathing in the country is principally due, he conceives, to that cause.

24. As young animals bear a limited respiration better than adults, he infers, that children, in whom respiration may be limited by engorgement of the lungs, will, *cæteris paribus*, be in less danger than adults, in whom respiration may be limited in like manner, and to

the same degree, and as the disturbance of the system, indicated by the acceleration of respiration, circulation, &c. is so much the greater as the want of air is the more pressing, the symptoms of pneumonia will be more intense in adults, in cases in which the relative extent of disease is equally limited.

25. If, therefore, an individual be affected with pneumonia, so far as to endanger his life by diminished communication with the air, the most urgent indication will be to employ the best means for bringing back his constitution to that state which would enable him to support his limited respiration. For this purpose, blood enough must be abstracted to diminish the power of producing heat, and keep it within the limits compatible with life. The more serious the case, the greater ought to be the abstraction of blood. Such is the author's theory. We would inculcate the same practice, under the obvious indication that the inflammation must be got under, otherwise it will run on to disorganization and death.

Some other *applications* are given by M. Edwards, but they are mostly speculative, and not as pregnant with interest or novelty as those we have considered.

The following remarks in his concluding application are, however, important.

“We find in the changes which the blood can undergo as to its composition, a fertile source of the changes in the mode of vitality. It would appear at first that it is only through this medium that we can act on the nervous system, in order to modify its action so as to change the constitution of individuals; on account of the extent in which this fluid can vary, and of the apparent immutability of the nervous system in its form and structure.

“It is evident, that the dimensions and proportions of that system have limits assigned by nature to the modifications which their vitality can undergo; it is, however, susceptible of considerable changes, not discernible by inspection, but which manifest themselves by the actions which result from them, and which do not arise from the influence of the blood. Such effects may, as we have formerly proved, be produced by temperature, by light, electricity, and a number of other influences by contact to say nothing of moral causes. It is this which I have had in view in speaking of the special action of the air on the system, and which I have designated vivifying influence.

“It is thus that the impression of the air serves to reanimate a life almost extinguished in the case of apparent death, and here man has an advantage over all warm-blooded animals, even the hybernating. Their skin, covered with hair or feathers, is less accessible to the air; and I have never seen an adult individual which, after the cessation of all external motion by submersion in water, has been recalled to life by exposure to the air. Man, on the contrary, whose skin is bare, delicate, and sensible, may be reanimated by the action of the air, when he appears to have lost, under water, sense and motion.

“We have shown elsewhere, that new-born children, when deprived of air, would not give signs of life during so long a space of time as young mammalia

of the same age, which are born with closed eyes; they will, however, more easily recover from apparent death, because their skin is adapted to receive a stronger impression from the air.

“We have seen how fatal heat is in cases of asphyxia, and of very confined respiration. Now, when the action of the air is reduced to the effects which it produces upon contact with the skin, its influence is the weakest possible, and at first it cannot easily be conceived what advantage can be derived from the application of heat. If that application be of long duration it will be fatal; in some cases it may be useful if it is of short duration. When an animal is plunged in water at the temperature of 40° cent. or 104° Fahr., its motions are much more forcible, but less numerous than at inferior temperatures. There are circumstances, then, in which heat may be momentarily applied in order to excite the movements of the chest. The immersion of a great part of the body in warm water, is frequently an efficacious means of reanimating a child just born without signs of life. As soon as motion is produced, or if it be slow in manifesting itself, it will be right to abandon a method, the prolonged use of which, would be fatal.

“We must, therefore, look upon the vivifying influence of the air in two points of view, its direct action on the nervous system by contact; and its action on the blood by the changes which it produces in it. In like manner, the vitality of individuals may be modified by a number of other causes which act immediately, either on the nervous system, or on the blood. Many facts mentioned in this work, are examples of both modes of action.”

We have thus endeavoured to lay before the reader a full and clear analysis of the topics embraced in the original work of Dr. Edwards, as well as in the version before us. No one can witness the labour and research bestowed by the author without being impressed with his preëminent qualifications as an experimental physiologist, and without according with the encomiastic remarks of Dr. Hodgkin.

“Some minds,” he observes, “are so happily constituted as to have a remarkable readiness in perceiving the relations which connect facts and observations, which to others appear not merely isolated, but absolutely contradictory. This appears to be particularly the case with Dr. Edwards. The labours of his predecessors had accumulated a vast collection of invaluable facts and observations, many of which seemed to be almost annihilated by their standing in direct opposition to others supported by equally valid and respectable authority: the labours of Dr. Edwards have explained many of these discrepancies. It may be ill-becoming in me to anticipate the judgment of the reader, but I cannot refrain from expressing my admiration of the patient and clear induction with which the doctor proceeds, step by step, through the great variety of subjects comprised in his work, so as to maintain the unity and connexion of the whole, and of the happy art with which he has both availed himself of the experiments and observations of his predecessors, and supplied the breaks and deficiencies which he met with, by well-contrived, simple, and conclusive experiments of his own.” Preface, p. v.

The appendix to the work by the translators, consists of various papers by Dr. Hodgkin and other individuals. The first is on *Elec-*

tricity, by MM. Prevost and Dumas, and comprises a detailed account of their views regarding muscular contraction, which were briefly explained in a late number of this Journal.* The second is by Dr. Edwards, and is “*On Muscular Contractions produced by bringing a Solid Body into contact with a Nerve without a Galvanic Circuit.*” It has been long known, that when nerves and muscles are exposed in a living animal, and brought into contact, contractions or convulsions occur in the muscles. The experiments of GALVANI, VOLTA, ALDINI, PFAFF, HUMBOLDT, and others, had satisfactorily established this. In the experiments of M. Edwards, the same effect was produced by touching a denuded nerve with a slender rod of silver, copper, zinc, lead, iron, gold, tin, or platina, and drawing it along the nerve for a space of from a quarter to a third of an inch. He took care to employ the metals of the greatest purity, and as they were supplied to him by the assayers of the mint. But it was not even necessary that the rod should be metallic, he succeeded with glass or horn. “To produce muscular contraction it is sufficient that the nerve be touched with any solid body in the manner above related.” All these metals, however, did not produce equally vigorous contractions. Iron and zinc were far less effective than the others, but no accurate scale could be made of their respective powers.

Much difference is found to exist when electricity is employed, according as the nerve is insulated or not, for as the muscular fibre is a good conductor of electricity, if the nerve be not insulated, the electricity is communicated to both nerve and muscle, and its effect is consequently diminished. It became interesting to know, whether any difference would be produced, when one metal only is used, if the nerve be insulated or not. In the experiments, above referred to, the nerve was insulated by passing a strip of oiled silk beneath it. A comparison was now made between an animal so prepared, and another in which the nerves, instead of being insulated, reposed on the subjacent flesh.

“I made use,” says M. Edwards, “of small rods, with which I easily excited contractions, when I drew them from above to below, along the portion of denuded nerve, which was supported by the oiled silk; but I was unable to excite them, when I passed them along the nerve of the other animal, in which they were not insulated. Frequent repetitions assured me, that the want of effect did not depend on difference in the degree of contact: I tried the experiment on many animals of the same species, lest there might be any thing in individual peculiarity. As in the one case the nerves were brought further into view, and kept somewhat tense and even with the sacrum, by means of the slip of oiled silk,

* Number XXIII. for May, 1833, p. 144.

whilst in the other they had no such support, I restored the parity of position, by placing under the unsupported nerves, a portion of muscle, corresponding to the slip of oiled silk, as well in size as mode of insertion, and still was unable to produce contractions by treating the uninsulated nerve, whatever was the material of the rod employed as the exciter. The difference was rendered still more striking, when instead of making the comparison between two individuals, it was made upon the same animal. After having in vain attempted to produce contractions by contact of a nerve resting upon muscle, I found that they might still be induced, if the oiled silk were had recourse to, and I was able to command their alternate appearance and disappearance, by using sometimes a non-conductor, and at others, a conductor for the support of the nerve." p. 313.

Somewhat surprised at these results, our author was stimulated to the investigation—whether some degree of contraction might not be excited by touching the uninsulated nerve? and, having observed, that in the insulated nerve contractions were most constantly produced by a quick and light touch, he adopted this method in an animal whose nerve was not insulated, and frequently obtained slight contractions.

All his experiments on this matter seemed to prove satisfactorily, that, *cæteris paribus*, the muscular contractions produced by the contact of a solid body with a nerve, are much less considerable, or even wholly wanting, when the nerve in place of being insulated, is in communication with a good conductor; "and it would seem to follow, as a legitimate conclusion, that these contractions are dependent on electricity;" facts, which it is highly necessary to bear in mind, in all experiments on animals, where feeble electrical influences are employed.

On the remaining selected articles we cannot dwell. The length to which this review has already extended, precludes us. We may merely remark, that in the article on *atmospheric electricity*, by Pouillet, the author ascribes its origin greatly to the changes effected during vegetation, and to the evaporation from the surface of the sea, which forms, in his opinion, one of the most important sources. Signs of electricity are produced by evaporation from an alkaline solution, but not from mere evaporation, whether rapid or slow. Lakes and rivers are, however, presumed to have their influence, since their waters are never perfectly pure, but contain alkaline impregnations.

The remaining papers consist of an extract from an *Essay on some of the Phenomena of Atmospheric Electricity*, by Luke Howard, F. R. S., which was published thirty-four years ago, with remarks on the same subject by the editor, (Dr. Hodgkin,) and experiments and observations by C. Woodward and P. Smith: Dr. Hodgkin's Inaugural Essay—*De Absorbendi Functione*—a fair specimen of such

essays, but not worthy perhaps of republication, in the same form, at least; with further remarks on the same subject, by the author: *On the Phenomena to which the names Endosmosis and Exosmosis have been given by Dutrochet*: *On the Microscopic Characters of some of the Animal Fluids and Tissues*, by J. J. Lister and Dr. Hodgkin; and lastly a "juvenile essay," by Dr. Hodgkin, *on the Uses of the Spleen*, published in the *Edinburgh Medical and Surgical Journal*, January, 1822; in which he regards, with others, the spleen as a diverticulum, and as fulfilling an office in the animal system, similar to that of tubes and valves of safety, in various kinds of chemical and mechanical apparatuses.

Many of these subjects have been noticed in the pages of this journal, and although the author's sentiments are manifestly regarded by him to be full of important bearings, we have strong doubts whether the physiological world will think them equally so. His microscopical researches have certainly destroyed the idea of the beautiful harmony and simplicity, that appeared to prevail in organized existence, from the microscopic researches of Dr. MILNE EDWARDS, who found, that "spherical corpuscles, of the diameter of $\frac{1}{300}$ th of a millimeter, constitute by their aggregation, all the organic textures, whatever may be the properties, in other respects, of those parts, and the functions for which they are destined."

Under this view of Dr. Edwards, it followed, of necessity, that all organized bodies possess the same elementary structure, and that the animal and the vegetable are readily convertible into each other, under favourable circumstances, and differ only in the greater or less complexity of their organization. The globular tissue is asserted by Dr. Hodgkin to be a mere illusion, and we have again to refer the most minute parts of the cellular membrane, muscles and nerves, to the striated or fibrous arrangement.

In the notes, p. 483, we have the old claim of Dr. STEVENS—that he suggested to Drs. FAUST and MITCHELL their important experiments on the penetrativeness of gases, vindicated by Dr. Hodgkin; but on this we have already expressed our sentiments.*

With respect to the execution of the translation it is but moderate. Due attention has not been paid to the correction of the proofs; the verbal mistakes are numerous, and throughout the first portion of the work, the thermometric calculations are given in degrees and minutes; $33^{\circ} 8'$ for example, being written for $33^{\circ}.8$. Especial care should have been paid to prevent such mistakes, in a work whose great value is its accurate experimental details and estimates.

R. D.

* American Journal of the Medical Sciences, for May, 1833, p. 201.

BIBLIOGRAPHICAL NOTICES.

XV. *A New Exposition of the Functions of the Nerves.* By JAMES WILLIAM EARLE. Part I. Longman, Rees, & Co. 1833.

The author of the volume before us, very truly remarks, that when we consider the many and almost insurmountable difficulties which present themselves to the physiologist in inquiring into the hidden functions of the nervous system—the various sources of error and perplexity ever occurring to the inquirer from injury to its functions by the very means employed to examine into them—how essential it is to the existence of animals, and how little light the mere knowledge of the anatomical structure and disposition of the brain and nerves, has thrown upon the mode in which they operate in producing the different phenomena upon which the continuance of life depends, we can neither be surprised at the opposite conclusions at which some observers have arrived, nor at the unsatisfactory state of our knowledge up to the present hour.

Mr. Earle thinks, that our acquaintance with diseases of the nervous system may be considered as nearly parallel with that of our predecessors, with regard to those of the sanguiferous system before the discovery of the circulation of the blood. They had some idea of the pulmonary circulation, as we have of the different functions of the anterior and posterior spinal nerves;—

“Yet we wonder that they could have considered that the small amount of knowledge which they possessed, could enable them to account for phenomena of daily occurrence, and our successors, in like manner and with equal justice, will no doubt be surprised at us.”

The author appears to be very confident of the novelty and importance of the views to which he has been led by his experiments relative to the functions of the nervous system in health and disease; for he remarks, that if the discovery of Harvey, admitting of such clear and satisfactory demonstration, met with violent opponents and a tardy acquiescence, in adducing facts which are addressed to the eye of reason only, he cannot expect to escape that share of prejudice and opposition which has always attended the announcement of novelty; nor that the opinions derived from the facts which he has brought forward will be readily allowed to be just; for, as it has been well observed by an old writer, “before truth in its silent and disputed march has roused the attention of the indolent, converted the supercilious, subdued the interested and obstinate, and reached the ears of all, an age has passed away.”

The attention of Mr. E. was more particularly directed to physiology by the great alarm occasioned by the frequent occurrence of hydrophobia in the spring and summer of 1830, and by a consideration of the fact, that many diseases remain intractable until their nature is understood. It appeared to him that this was probably the case with hydrophobia—and that we should remain ignorant of the place to apply our remedies in that disease, as well as of the nature of those remedies, until we had ascertained the cause of the violent spasmodic ac-

tion of the muscles of the throat and chest. But in order to arrive at the cause of the improper action of muscles in disease, it was first necessary to understand the cause of their healthy action. This led to the examination of a multitude of experiments bearing upon the subject, and naturally involved the consideration of the laws which regulate the whole of the vital functions.

“But beyond inquiring into the cause of the healthy action of muscles, it was necessary to ascertain the nature of the power which enables them to contract at all; for it is as necessary that muscles should have a power of contraction as that there should be a power to call them into action, so that it may be useful for purposes connected with the maintenance and preservation of life.”

As may be known to our readers, Dr. Wilson Philip, stated as the results of his experiments, that the contractility or power of contraction of the voluntary muscles, is entirely independent of any influence derived from the nervous system, as is also that of all involuntary muscles, though these last are at all times readily influenced through that system. These facts, as he himself admits, seem to imply a contradiction; but he agreed with Le Gallois, that two facts well ascertained, however inconsistent they may seem, do not overturn each other; but only prove the imperfection of our knowledge. It occurred to Mr. Earle, that as it is not common to find any inconsistency in nature, and as a great deal of evidence is brought forward by Dr. Philip upon a point but little requiring it—the readiness with which the involuntary muscles are influenced through the nervous system, the most important question might have been overlooked. He therefore determined to ascertain whether there actually was any inconsistency, and whether the facts from which such opinions were deduced were unobjectionable. He remarks, that the experiments of Le Gallois were considered by a committee of the French Institute as having entirely overturned many of Haller’s opinions, and also as affording a satisfactory explanation of several facts which no one had ever accomplished before him.

“It has remained for the ingenuity of Dr. Philip to point out certain inferences which are not borne out by the facts adduced by M. Le Gallois. It is, in like manner, the object of the present investigation to show that many of the facts brought forward by Dr. Philip do not warrant the inferences he has drawn from them. As Dr. Philip considers some of his experiments not only confirm some of the most important of Haller’s opinions, but remove all objections which have ever been made to them, so in refuting the conclusions of Dr. Philip these objections must be allowed to return in all their force; consequently, the observation which he makes upon the experiments of Le Gallois,” by ascertaining some facts of great importance, while others immediately connected with them escaped his observation, have left the subject in greater confusion than he found it “may be applied with equal justice to his own.”

It is to be remarked, that according to Mr. Earle there does not appear to be any reason to doubt the accuracy of Dr. Philip’s experiments—with the exception of one. It is simply to the inferences deduced from them that he objects.

Mr. E. affirms, that if the details of Dr. Philip’s experiments are read with due attention, it will be readily perceived that they do not prove, 1st, that the power of contraction or excitability of the muscles of voluntary motion is dependent on the mechanism of the muscular fibre, and independent of the nervous system; 2d, that the action of the heart and arteries is independent of the nervous system; 3d, that the nervous power is independent of the brain; 4th,

that the nervous power is identical with galvanism; and 5th, that the vital principle is independent of the brain. These points it is the object of his work to disprove.

He remarks that Dr. Philip has also fallen into a great mistake in confounding the "nervous power" with volition; and adds, that this mistake leads to great confusion with regard to what he (Dr. P.) called the sensorial power, of which he considers volition as forming a part. Whether Dr. Philip wishes to signify by this term the united functions of the whole brain, including the intellectual and moral faculties; or whether he only signifies volition, sensation, and that influence which secreting surfaces lose when their communication with this organ is interrupted by the division of their nerves, as three joined in one; or whether he means that they are independent of each other, it is, he thinks, absolutely impossible to discover.

"But whatever meaning Dr. Philip attaches to the term sensorial power, it is certain that its two most obvious properties, namely, volition and sensation, bear an opposite relation to each other; the one being an active and the other a passive property." "Besides this opposite relation, these properties are entirely independent of each other; because volition may be exerted spontaneously at any time without any distinct external impression having been previously conveyed to the brain along the posterior nerves; nor is the perception of any such impression of necessity followed by an exercise of volition. On this account the use of the term sensorial power is highly objectionable, and" "ought to be discontinued."

Previously to entering upon the examination of the facts from which Dr. Philip has drawn his inference, Mr. E. points out to what he regards as two important errors arising from a most unaccountable misconception of well-known facts, which are of sufficient importance to affect the whole doctrine of irritability. These errors have reference to the circumstances which cause the life and death of an acephalous fœtus; and to the reason why the heart of an animal continues to beat a short time after the head is cut off.

The phenomenon presented by the birth of a brainless fœtus has generally been referred to, as containing the most positive and convincing evidence, that the doctrine which teaches that the brain is the cause of all life and motion is erroneous. Mr. E. thinks, however, that it only requires a little more attention than has yet been paid to the circumstances attending these monstrous productions, to show that instead of contradicting, they usually confirm this doctrine. According to him, in order to investigate this subject properly, the first question asked should be, what is the cause of the motion of the first punctum saliens in the embryo. The motion of the red globules of the blood is certainly an effect of some cause or other; for we cannot imagine them capable of moving by any inherent property. This cause he feels disposed to refer to the nervous influence of the mother; because there is neither nerves nor brain in the embryo, nor, indeed, any thing belonging to the latter which can be the cause of the motion. If that cause has the power of originating the motion of the first punctum saliens, so also it must have the power to continue the motion of the blood until the fœtus is fully developed, and ready to be born; or in other words, capable of taking upon itself the maintenance of an independent existence.

"For this purpose it is necessary that the young animal should be provided

with an apparatus calculated to supply exactly the loss it will sustain upon being separated from its mother; otherwise it must inevitably die upon being removed from that which had hitherto been the cause of its life and growth. Now the only system which appears at all fitted to answer this purpose is that of the brain and nerves."

Almost every possible variety of congenital defects has been recorded, and it is found that the duration of their existence has invariably been proportionate to the approach towards perfection which the brain and spinal marrow had attained.

"Some in whom there has been a spinal marrow and a small portion of brain have been known to live even for a week. Some, who have had no brain but a tolerably perfect spinal marrow, have lived a few days; while those who have had neither brain nor spinal marrow, have never breathed at all."

It is true, that in such monsters the heart, lungs, or ribs are rarely found perfect; but whether this be so or not—whether such fœtuses breathe or not at birth, is of no consequence to the present question, and does not increase the difficulty of understanding why they should move immediately after birth; because, being at that time only just removed from what had hitherto supported their growth and vitality, they are very nearly in the same condition as an animal from whose body these parts have been recently severed. Neither is there, according to Mr. Earle, any difficulty in comprehending why the first two varieties should occasionally exist a few days or even weeks; because the nearer they approach perfection, however distant from it, the better are they able to support and maintain, for a short time, the vitality which they possess at the time of birth; but such defective organization being insufficient to answer this purpose effectually, death must at length inevitably ensue. Where then, he exclaims, do we find in the circumstances attending the birth and death of these unhappy objects, any evidence which proves that the brain is not the source of nervous influence? Do they not rather offer the strongest possible proof, that unless there is an apparatus provided which is capable of supplying the place of that which is lost upon the fœtus being separated from the mother, it must inevitably die?

In regard to the second subject on which he supposes an important error has been committed by the supporters of the doctrine of irritability—the continuance of the action of the heart after the decapitation of the animal—Mr. Earle remarks, that the will during perfect health is always the power which calls the voluntary muscles into action, and that when the head is cut off, the will being at the same time removed, the muscles, after a few contractions caused by the injury to the spinal marrow as the knife passed through it, remain quiescent. But the case is very different with regard to the heart. Neither the will, nor any exercise of the intellect has any effect upon the contraction of that organ; hence the cause of its action is not removed when the head is cut off, and it ought not to be expected that the heart should cease to beat immediately upon removal of that which never had any effect upon it.

"In a few minutes, however, it does cease to beat, and then stimulants so often fail to excite any further contractions, that some have denied that it can be made to contract again. The heart is now said to be exhausted; but is this the case with the voluntary muscles? Certainly not; for as the cause of their action was removed with the head, they have remained at rest; consequently

they are not exhausted, and are still capable of contracting when stimulated. Now, supposing that the nerves of these muscles and the nerves of the heart each had their proper proportion of influence at the time of the removal of the head, the nerves of the voluntary muscles and the nerves of the heart would be in an opposite state as regarded their nervous influence; the one would be plus, the other minus, consequently the voluntary muscles will contract when stimulated, but the heart will not. When, however, the former have been exhausted by having been repeatedly excited to contract, they are then, but not till then, in the same condition as the latter, and neither can be excited to any fresh contraction." "It appears to me impossible to arrive at any other conclusion from these observations, than that the reason why the heart continues to beat a short time after the head of an animal is cut off, is because the cause of its constant motion is not removed by such an injury."

Mr. E. next proceeds to state the grounds upon which he considers himself justified in believing, that a something, which has been called nervous influence, is constantly emanating from the brain. As there are many who deny the existence of any fluid which comes from the brain and passes along the nerves, on account of its being invisible, the author thinks it necessary to refer to the phenomena observed in certain fishes. Some species of these are observed to have the power of generating, within their bodies, a subtile fluid, which for want of a better term has been called animal electricity, although the points of difference between it and chemical electricity are more remarkable than their points of analogy. Mr. Hunter long ago pointed out to the magnitude and number of the nerves bestowed on the electric organs, in proportion to their size, and thought it highly probable that they were subservient to the formation, collection, and management of the electric fluid.

"When one of these fishes," says Mr. E. "has been much irritated the shocks which it gives gradually become so feeble as to be scarcely perceptible; but if he is allowed to remain quiet for a few hours, he is again capable of giving a very powerful shock. This fact proves that there is within the animal an apparatus capable of reproducing the electricity when it has been exhausted. It is impossible to suppose it can be restored by rest alone, for however long the animal might remain quiet, it would still be precisely in statu quo, unless some positive action had gone on *during* rest. Neither can it be imagined to have been reproduced by any action of the nerves themselves, because it cannot be supposed that this would have happened if their communication with the brain had been cut off by their division; but there is no difficulty whatever in attributing the reproduction of this fluid to an action of the brain, by means of which it may be gradually collected in the nerves; because such an opinion is in perfect accordance with so many well-established facts, which prove that the functions of the nerves are always affected in proportion to any extent of injury which may be committed upon the brain, and if formed by the brain it can arrive at the electric organs by no other conductors than the nerves belonging to them."

From these facts, as well as from the similarity of appearance of gases having widely different properties, and the invisible nature of caloric, Mr. Earle concludes, that the great difficulty of supposing the brain capable of forming any thing which can pass along the nerves without being seen, and can only be appreciated by observing certain phenomena which indicate its presence, is entirely overcome.

Many physiologists are of opinion that the brain is necessary to secretion, although the precise mode of its operation has never yet been satisfactorily ex-

plained. After remarking that there is great reason to believe that the whole secernent function, comprehending every thing relating to the growth and nutriment of the body, and particularly that part of it which constitutes the digestive process, is performed at least as well during sleep, if not better, than when the body is in motion, and that consequently the action of the brain by which this function is supported can never be at rest a single moment, Mr. E. remarks, that he considers this secernent function to be the result of an action of the whole brain. To this opinion he is led by two reasons: first, because it is proved by Dr. Philip, that the action of the heart cannot be affected by a stimulant, however intense, if it be applied to a small part only, while the motion of this organ is immediately increased when a stimulant is applied to any part of the brain, provided the extent of the surface stimulated is considerable; secondly, because the size of the brain is so small, as compared with that of the body, that it is scarcely possible to suppose that an action of a part only of this organ could be equal to the maintenance of all the vital functions. As the brain is constantly acting, it remains to be inquired in what manner this action is applied to fulfil its important office. As may be presumed, Mr. E. concludes that the nerves are evidently the only means by which it can be rendered available. Before entering fully on this subject, he presents his views respecting the proper classification of the nerves. After adverting to the classification proposed by Dr. Philip, and remarking that it is rather calculated to perpetuate errors than to render the study of the functions of the nerves less intricate, he remarks that the different functions of these, according to what is at present known of them, should form the basis of their classifications, and that they should be considered, first, according to the functions which each performs independently of the others, and secondly, according to their natural arrangement and the functions which they perform in combination. In accordance with this plan, he proposes that the term cerebral nerve, instead of being, as hitherto, applied to every one which passes through an aperture in the skull, should be restricted to the olfactory, ophthalmic, and auditory nerves, on account of their being more particularly connected with the intellectual functions which are performed by the brain. Owing to these nerves being the most simple in their functions, that of transmitting impressions to the brain, and owing to their filaments not being intermingled with those of any other nerves, he proposes that they should form the FIRST CLASS. The SECOND CLASS comprehends every nerve by means of which muscles are subjected to the influence of volition. These are the anterior nerves, and belong to the anterior columns of the spinal marrow. The THIRD CLASS comprehends every nerve belonging to the posterior columns of the spinal marrow, transmitting impressions from their extremities to the brain. These nerves have protuberances upon them just before their respective junctions with the posterior columns of the spinal marrow. Lastly, the FOURTH CLASS comprehends every nerve proceeding from the sympathetic ganglions, and imparting to every tissue, whether of a muscular, (as the heart,) or of a fibrous, (as the arteries and iris,) texture, a power of motion altogether independent of any influence that the will can exercise.

“These four classes of nerves are found distributed in four different orders. The first class, or purely cerebral nerves, are the most simple in their arrangement, because their filaments are never intermingled with those of any other

nerve. These therefore should be considered as forming the *first order of distribution*. The next most simple arrangement is found in those nerves which are formed by the union of anterior and posterior filaments, or the second and third classes. These therefore should form the *second order*. These nerves supply the bones, muscles, &c. of the limbs and a great part of the trunk of the body; and those parts, whose structure is such as to allow of motion, and which can at any time be called into action by the will."

"The next variation is found in the union of posterior filaments with those belonging to sympathetic ganglions; or the third and fourth classes. These, therefore, should form the *third order*. All parts supplied by these nerves, whose structure is such as to allow of motion, such as the heart, arteries, intestines, and iris, are observed to be in constant action from birth till death, without becoming exhausted or fatigued, and without requiring rest. The action of these parts cannot be affected by the will.

"The last variation is found in those nerves which are formed by the union of anterior, posterior, and sympathetic filaments, or *second, third, and fourth* classes. These therefore should form the *fourth order*. The muscles supplied by filaments arranged in this order, are observed to have a power of supporting constant motion without fatigue, but they differ from those supplied by the third order in being always obedient to the command of the will. The nerves and function of the diaphragm affords an example of this variety."

The nerves belonging to the first of these orders are single, those belonging to the second and third are double, and those belonging to the fourth are treble. While some parts receive anterior, some sympathetic, and others filaments of both these classes, the posterior filaments are common to all. The reason is obvious; for whatever difference of motion may be required in different situations and structures, the maintenance of the healthy state of the various tissues is necessary to all parts, in order that they may be in a proper condition to act; and for this purpose posterior nerves are indispensably required.

Having disposed of this part of his subject, and stated that although the secret function of the brain is the result of a physical action in it, he will postpone the explanation of it as well as of various other phenomena to a future work which he intends to lay before the public, Mr. Earle,—who seems to have adopted Reil's opinion, that the nerves of motion spring from the *cerebrum*, while the nerves of sensation eventually terminate in the *cerebellum*,—proceeds to state the precise manner in which he considers "the influence of the brain, or more properly the *cerebral influence*, because it proceeds from the cerebrum, and not from the cerebellum, is applied by the nerves in order to effect secretion, and to supply the voluntary and involuntary muscles with their power of contraction."

He remarks, that the action of the anterior nerves is always from the cerebrum towards their extremities, that of the posterior is exactly the reverse, being from their extremities towards the cerebellum; and that there is no instance in the whole body of an anterior nerve not being joined to a posterior nerve.

"This arrangement," he continues, "appears to be for the purpose of allowing the cerebral influence, which flows along the anterior, to return in a reflux direction along the posterior nerves and posterior columns of the spinal marrow to the cerebellum; thus completing a circulation as perfect as that which is carried on by the arteries and veins, and which I venture to call the *CIRCULATION OF THE NERVOUS SYSTEM*." It is to the passage of the cerebral influence, from the extremity of one nerve to that of another "analogous

to the passing of galvanism from the positive to the negative pole, that I am inclined to attribute the maintenance of the blood in its fluid state, the evolution of caloric, the secretion of synovia in the joints and bursæ, and, in fact, the support of the whole secernent function upon which the deposition of new and the removal of old parts depends. It is further to be observed, that as this circulation is constantly going on, there is always a certain quantity of cerebral influence in the anterior nerves, consequently all the muscles to which these nerves are distributed must always act in obedience to the will, simply because volition can affect their prime origins which are in the cerebrum."

As may be perceived no provision is made in the above arrangement for the supply of the viscera. This, according to our author, is effected in the following way. Every posterior nerve is provided with a ganglion, (which as they do not interfere with the transmission of external impressions, evidently perform some office which has not hitherto been understood,) in order that part of the current which is returning in a reflux direction along the posterior nerves, upon which alone these protuberances are found, may pass at regular intervals into the sympathetic ganglions. The secernent function of the viscera must be performed in the same way as in the limbs, and Mr. E. thinks that an opportunity is offered by the wandering course of the pneumogastric nerves, for the passage of the same fluid from the extremities of the nerves coming from sympathetic ganglions, to the extremities of nerves of an opposite character, at once providing for the whole secernent function of the viscera. As regards the rest of the returning current, which is over and above what is necessary for the supply of the viscera, it is supposed to pass upwards along the posterior columns of the spinal marrow into the cerebellum, supplying in its passage the spinal accessory nerves, so that the muscles to which they are distributed are endowed with the power of maintaining long-continued action without fatigue.

"Thus the physiology of these nerves, which at first sight appears so difficult of explanation, becomes a most convincing proof of the existence of a CIRCULATION IN THE NERVOUS SYSTEM. The superior cervical ganglion of the sympathetic is supplied from that on the pneumogastric precisely as the thoracic, abdominal and pelvic sympathetic ganglions are supplied from the ganglions on the posterior nerves which are in their neighbourhood."

The succeeding chapters of the first section are devoted to the consideration of the facts upon which the views we have just laid before our readers are founded. The author first examines the functions of the second order of nerves, and states his reason more fully than he had done before, for considering the muscles as dependent upon the nerves for their power of acting; or what other physiologists have denominated their irritability or excitability. The objections he presents to the Hallerian doctrine, or rather to Dr. Philip's views, for it is principally against this experimenter's conclusions that his criticism is aimed, are rather theoretical and argumentative than the result of counter-experiments; for throughout the whole of this chapter, he adduces but one single experiment amid a number of arguments tending to show the fallacies of the conclusions which Dr. Philip has drawn from his numberless vivisections. Some of these arguments are highly ingenious and deserve an attentive consideration; but we are not disposed to admit, that either they or the experiment he has detailed are calculated to make us refuse coinciding with those who recognise

the existence, in muscles, of an inherent power of excitability, independent of any influence imparted to them by the nerves. But be this as it may, his principal reasons for believing in the necessity of this influence are—that when animals are deprived of life by lightning or by any poison which suddenly affects and destroys the nervous system, the muscles cannot be stimulated to contract after death, and that there is no experiment which goes the length of proving, that muscles when exhausted can recover their power after the division of their nerves; whereas when the nerves remain entire and uninjured they recover that power after being considerably exhausted by frequent contraction.

Mr. Earle next inquires, in a particular manner into the functions of the third order of nerves—those composed of posterior filaments with branches belonging to the sympathetic ganglions, and which supply the heart and vessels of circulation. He selects a few of the most decisive of the experiments detailed by Dr. Philip, and from which that gentleman had thought himself justified in concluding that the action of those organs is independent of the brain. His object in selecting those experiments is to show the difference of effect produced, by destroying suddenly, or slowly, or by wholly removing the brain and spinal marrow, both in warm and cold-blooded animals; and that all involuntary motion is injured in proportion to the degree of injury committed upon the nervous system—a circumstance from which he concludes, that no further evidence is wanting to prove that involuntary, as well as voluntary motion, is entirely dependent on an influence derived from the brain, and that the nerves themselves have undoubtedly an action to a certain extent independent of the brain and spinal marrow, precisely as the minute vessels of circulation have an action to a somewhat similar extent independent of the heart. These opinions are, he thinks, strongly corroborated by the observations of Flourens and Marshall Hall, who have taken notice of the gradual cessation of the circulation which follows the careful removal of the brain, commencing in the most minute extremities of the blood-vessels, where provided the brain be the original source whence the nerves derive their influence or power, it is in the failure of the action of these minute vessels, on account of their being most distant from the brain, that we should naturally expect the effect of its removal would be first perceptible.

“In thus ascending from effects to causes, it is found, that the brain is the source whence the influence of the nerves is derived, and that these again have the power of distributing it for a short time after the removal of the brain so long as any influence remains in them, precisely as they did before the connexion was interrupted; but it must not be forgotten, that the moment at which the brain is either removed or destroyed, is exactly the time at which the failure of all motion commences. These facts and observations lead to the inference, that the same relation subsists between the brain and nerves, as between the heart and arteries; the brain being the source whence the nerves derive their influence, the heart the source whence the arteries derive their supply of blood.”

Mr. Earle is of opinion, that the experiments which Dr. Philip instituted to show, that the action of the heart and vessels of circulation may be influenced by stimulants and sedatives applied to the brain and spinal marrow, prove the fact sufficiently well. On this subject he makes the following remarks.

“The terms stimulant and sedative are used to express nothing more than

increase and diminution. At the time of the commencement of these experiments the heart was beating, and the application of either the one or the other to the brain or spinal marrow excited no new action either in the brain or in the heart, but simply caused an increase or diminution, or in other words, a variation of what already existed. As the increased or diminished action of the heart was the result of a corresponding action of the brain caused by the application of either agent, so the ordinary action of the heart is necessarily caused by the ordinary action of the brain, and as the former invariably ceases to beat soon after the removal of the latter, it must be concluded, that so long as the heart is acting in the perfect animal, the brain is acting also."

Mr. Earle next inquires into the dependence of the secernent function on the nervous system. This function, he remarks, comprehends, besides the formation of particular secretions and excretions, the growth and nutrition, the deposition of new and the removal of old parts throughout the whole body. As the blood is evidently the fluid from which all functions are formed, the first step in this inquiry is, he thinks, to ascertain the cause of its fluidity. On this subject, to which he appropriates a separate section of his work, he adopts the conclusions of Dr. Wedemeyer, who regards the cause of this fluidity to be dependent upon an influence of the nerves upon the blood. He enters into a long discussion to prove that nervous influence and galvanism are not identical. He adopts the views of Wedemeyer and other anatomists who maintain that the blood in the finer capillaries no longer flows within actual vessels, whose parietes are formed by a membranous substance distinguished from the adjoining cellular tissue by its texture and compactness; but in simple furrows or canals, whose walls are formed by the surrounding cellular tissue; and remarks, that while these observations appear decisive as to the place in which secretions are formed, the fact, that small arteries receive an increased supply of nerves in proportion as their size diminishes, seems to point out, in a manner scarcely to be misunderstood, the power by which secretions are formed. He inquires whether this function is performed exclusively by the third order of nerves, or by the sympathetic system; and comes to the conclusion, from the results of the experiments of Magendie on the fifth pair, and of others on the pneumogastric—

"Not only that every posterior nerve is concerned in performing secretion, but also, that the economy of the sympathetic ganglions has more relation to the means whereby the motions of the parts supplied by them may be constant and independent of the will, than to any difference of secernent function."

On the subject of the cause of animal heat he adopts the opinions of those who attribute this phenomenon to the influence of the nervous system, and quotes from Mr. Adelon's elaborate work on physiology, a detail of the experiments of Mr. Chossat, of Geneva.

That part of his work on which Mr. Earle seems to attach most importance, is that in which he inquires into the "*mode in which by means of the nerves THE CEREBRAL INFLUENCE is rendered available in maintaining the MOTOR and SECERNENT FUNCTIONS of the animal economy.*" In this section and in the succeeding he endeavours to sustain the theory laid down in his first chapters respecting the circulation of the nervous system, and the manner in which the sympathetic nerves receive their portion of nervous influence—a theory of which we have already offered a sketch. Without entering here into any details upon this subject, or examining the grounds upon which he endeavours to establish his

views, we may remark that the whole theory appears to us to be more fanciful than plausible, and to rest more on speculation than on the result of close observation and well-devised experiments.

There is no doubt, and it did not require the work under review us to apprize of the fact, that there exist nerves whose office is to convey the influence of the will from the brain to the muscles—and others destined to carry to the brain a knowledge of impressions made on surfaces of relation, or in the substance of the tissues; but we may reasonably doubt that things take place exactly as Mr. E. describes them.

Mr. E. starts from the fact, that the anterior branches of the spinal marrow are nerves of motion, and the posterior nerves of sensation, and that the same facts are also proved by experiments upon the anterior or posterior columns of the spinal marrow. It is thus plainly demonstrated, he remarks—

“That the influence of the will or of the brain cannot be transmitted to the voluntary muscles through the posterior columns or the filaments belonging to them; and that external impressions cannot reach the brain through the anterior columns or the filaments arising from them; any influence or impression so conveyed by either set of nerves would be retrograde, and contrary to their usual fixed mode of action, from which they cannot deviate. There is no action, therefore, in an anterior filament, except *from the brain to its extremity*; neither is there any action in a posterior filament, except *from its extremity to the brain*.”

Our readers will immediately perceive that this is taking for granted, as a fact proved beyond the possibility of doubt, a circumstance on which the ablest physiologists and experimenters are yet undecided, and which even if true would not prove the correctness of Mr. E.'s theory, but only afford us clearer views than we possessed respecting the precise origin and termination of the nerves of motion and sensation. The question is whether there is a constant passage of a fluid from the nerves of motion to the nerves of sensation—whether that fluid is the same in both orders of nerves. Now it may be objected to Mr. E.'s theory that if it is the same fluid which goes down one nerve and up another, we should be at a loss to explain how these two nerves can be enabled to perform functions of a very different nature, and that if we admit that the same fluid which going up towards the brain along a nerve of sensation, imparts motific power to another set of nerves which it encounters in its way upwards—the sympathetic and the accessory nerves, the difficulty would be rendered still greater. All this certainly is not very clear. In his opinion the precise mode in which the cerebral influence is rendered available for the accomplishment of the whole of that part of the secernent function upon which the growth and nutrition of the body depends, is easily understood; and is well illustrated by the well-known fact, that galvanism exerts its influence upon chemical substances in passing from the positive to the negative pole: but this is merely a supposition, and leads to no conclusion. In adducing arguments in proof of the existence of the circulation of the nervous system, such as he understands it, he makes the following remarks, which may not, perhaps, appear as satisfactory and conclusive to all our readers, as they do to himself.

“As I know of no reason which should induce me to suppose that this circulation does not exist, nor of any physiological fact or experiment which proves, that it is incompatible with the more obvious functions of the nerves relating to volition and sensation, and therefore cannot take place, I think that I am

justified in believing that there is a circulation in the nerves of a subtile fluid somewhat similar to electricity, passing as regularly and uninterruptedly along them from and to the brain, as there is of blood in its vessels from and to the heart."

In a chapter on the functions of the fourth order of nerves, or that formed by a union of anterior, posterior, and sympathetic filaments, Mr. Earle contends for the existence of a distinct class of muscles, differing from the voluntary and involuntary in the circumstance, that, though like the former, they are entirely subject to the regulation of volition, their action is continual, and they never require rest.

"The power of the will," he says, "over these muscles is only exerted occasionally as convenience or necessity may require, and is employed solely in increasing their action; but volition has no more power of stopping or preventing their action, than it has of interfering with that of the heart."

The muscles of the face, the intercostals, and the rest of the respiratory muscles, belong to this class. Mr. E. remarks, that the cause of this peculiarity in the action of these muscles is not to be either found or sought for in any difference in their structure, any more than in that of the purely voluntary or the purely involuntary muscles, but in the nerves by which they are supplied. He calls attention to the fact, that this class of muscles is supplied by the fourth order of nerves—that their involuntary action is provided for by means of branches from sympathetic ganglia—that they are subject to the will through the anterior nerves; and that they have posterior filaments, in order that the healthy condition of their structure, upon which their fitness to act depends, may be constantly maintained. This order of nerves is very numerous, and extensively distributed. It comprehends the third, fourth, fifth, sixth, portio dura of the seventh, glosso-pharyngeal, the primary branches of the pneumogastric, the ninth, and the anterior branches of all the spinal nerves, with the exception of the fifth, sixth, and seventh cervical.

"Considerable attention has been paid to some of the nerves of this order in consequence of the publication of Sir C. Bell's opinion respecting those which he has termed 'respiratory.' The basis upon which these peculiar opinions rest, appears to be the idea of there being a certain part of the superior portion of the spinal marrow expressly devoted to the regulations of the motions of respiration, 'a tractus respiratorius,' and that every nerve belonging to this tractus is especially destined to combine and assist in the performance of respiration, as a necessary consequence of its connexion with that particular part. I have found it impossible to adopt these views, for the following reasons: First, it is by no means clear that the tractus respiratorius has any existence: Secondly, some of the nerves termed respiratory arise from the anterior, others belong to the posterior, while the phrenic belong equally to both columns of the spinal marrow. These facts are altogether subversive of their arising from any one particular part; lastly, in classing the pneumogastric as a nerve of motion, Sir Charles is at variance with the results of his own experiments, which show that no posterior ganglionic nerve has any thing to do with motion."

The last nerves which Mr. E. notices, are the spinal accessory nerves. Though last, he says, they are the most important as regards the proof they afford of the existence of the circulation of the nervous system. He relates an experiment of Sir Charles Bell, who states, that if we expose this nerve, and

then induce excited respiration, so as to bring the mastoid muscles into powerful action in combination with the other muscles of respiration, and if, while this action is performed, we divide the nerve, the motion ceases, and the muscles remain relaxed until the animal brings them into action as voluntary muscles.

From this he concludes, that, without entering into any speculation on the respiratory functions of these nerves, it is evident that they bestow a power of involuntary motion upon the mastoid and trapezius muscles. There is a great necessity for this muscle having a power of involuntary motion to enable them to act constantly without becoming fatigued in moving and supporting the head, a function which muscles, supplied only by anterior and posterior nerves, would be by no means equal to.

“It is to be observed that the spinal accessory differs from all the rest of the nerves which belong to the posterior columns of the spinal marrow in several points. First, the most obvious difference is in the direction of the course of their filaments, which is from below upwards. The second is in their having no protuberance or ganglion upon them, either before, or at their emergence from their bony canals. The third in being motor nerves. They further differ from the rest of the posterior nerves in that, as the motor power which they bestow upon their muscles must be derived from the spinal marrow, *they arise from*, while the latter *terminate in*, the posterior columns.” “The only point which now remains to be explained, is how they receive the influence which they bestow upon the muscles. The direction of the course of their filaments precludes all idea of their influence being directly derived from the brain, even if the fact of their being involuntary did not discountenance such an opinion. It must therefore come from the posterior columns of the spinal marrow, and unless there is an upward returning current along these columns towards the cerebellum, the physiology of these nerves is absolutely inexplicable; but if there is such a current as that which I have endeavoured to show the nervous system is well adapted to carry on, it is precisely that which is most admirably calculated to provide a supply of nervous influence; constantly, because the action of the brain is constant; and involuntarily, because the will can have no power over the nerves along which it flows. According to this explanation, all the difficulties which have hitherto appeared to present insuperable obstacles, and to baffle every attempt to elucidate the physiology of the spinal accessory nerves, actually combine to afford the most beautiful confirmation of the existence of the circulation of the nervous system, which could possibly have been imagined.”

We have thus endeavoured to present in as concise a manner as possible some of the facts and inferences which have induced Mr. Earle to believe that there is a circulation in the nerves, and that instead of there being several separate and independent vital powers, there is but *one*, upon which every function necessary to the continuance of life depends; so that all the various phenomena result not from the exercise of different powers, but from a difference in the mode of the application of one and the same power. From what we have already stated in the course of this article, it may be seen, that we are not prepared to acquiesce in all the views of our author. We might, had we time and space sufficient at our disposal, show that on several other points besides those adverted to, the positions he assumes are very far from conclusive, and that he has particularly erred in respect to the functions ascribed to the pneumogastric nerve; but as the consideration of these subjects would lead us further than we can conveniently go, we must abstain from it. We close our analysis with the

remark, that the work before us affords evidence of considerable talent in the author, and induces us to hope that Mr. Earle will soon favour the medical profession with his promised volume on the function of the brain, but that we have been at a loss to discover in it those great discoveries—those very new views concerning the functions of the nervous system which were so pompously proclaimed in the commencement and in other parts of the work. The only novelty, perhaps, is the supposed existence of the nervous circulation, and the mode in which the sympathetic and accessory nerves are furnished with their portion of power. These views, however, as has been seen, are far from being very satisfactory. As regards the continuance of the influence of the brain on the heart and viscera even in the ordinary state of existence, and the property of the sympathetic, to remove, under particular circumstances, the organs from under the controul of the will, which at ordinary periods are subject to its influence, and to enable them to continue their action without repose, Mr. E. has been anticipated by many physiologists, and among them by M. Broussais, whose writings should be in the hands of every physician, and cannot, we may presume, be unknown to Mr. Earle.

L.

XVI. *Nouvel Aperçu sur la Physiologie du Foie et les Usages de la Bile. De la Digestion Considérée en Général.* Par BENJAMIN VOISIN, D. M. P. Paris, 1833. pp. 146.

New Observations upon the Physiology of the Liver and the Uses of the Bile, and upon the General Subject of Digestion. By BENJAMIN VOISIN, M. D.

Although we cannot accord the appellation novel to all the observations of M. Voisin, in relation to the physiology of the liver and of the digestive organs generally, they are nevertheless in the highest degree interesting. He has, it is true, advanced a few opinions in the course of his essay, the correctness of which will admit of very considerable doubt, but generally speaking his conclusions are based upon numerous facts and experiments, from which they appear to be legitimately deduced, while they certainly afford a much more satisfactory explanation of the several disputed points to which they refer, than those adopted by the majority of physiological writers.

As we have just hinted, many of the observations of M. Voisin are rather old opinions revived than original suggestions of his own. The credit is due to him, however, of placing them in a somewhat novel point of view, and of illustrating them by a variety of interesting and appropriate facts and experiments, in the collection and performance of which he has exhibited no little industry and skill.

The primary subject to which the observations of the author refer is the physiology of the liver. To this the first five chapters of the essay are devoted, and it is again repeatedly referred to in the subsequent part of the work.

The liver M. Voisin considers to be a secretory organ, the office of which is the depuration, not only of the venous blood, but also of the chyle, previously to the entrance of the latter into the thoracic duct. The bile, he maintains, is purely excrementitious and composed of the effete particles of the organs carried into the circulation by the absorbents, and of certain substances taken up by the lacteals with the chyle, and which are not adapted to nutrition. He ad-

mits, however, that the bile may act as the natural and necessary stimulus by which the peristaltic motion of the intestinal canal is excited and kept up.

In reviving thus the ancient, but by no means exploded, opinion that the liver is in fact the primary organ of hæmatisation—in other words, that by its action a species of purification is produced in the chyle, by which the latter is rendered more fit to mingle with and form a part of the blood—M. Voisin has attempted to establish its correctness by showing that all, or at least the major part, of the lacteals, before they empty their contents into the thoracic duct, pass through the substance of the liver.

The lacteal absorbents, he remarks, after passing a certain distance, anastomose with each other, enlarge in size, and are collected together so as to form a kind of plexus below the lobe of Spigelius, towards which they converge. From this point they penetrate into the substance of the liver, through which they ramify with great minuteness, and finally empty themselves into the reservoir of Pecquet.

“To prove that the chyloferous vessels do pass through the liver, in their course to the thoracic duct, it is only necessary to put a ligature around the latter below the diaphragm, in a dog, after he has partaken of a large quantity of food, and when digestion is presumed to be in full activity. The lacteals will then swell and become very apparent, their whitish colour being distinctly perceived. In consequence they may, without much difficulty, be traced from the interior of the intestinal canal, through the mesenteric glands, until their entrance into the liver.”

The foregoing opinion in relation to the course of the lacteals through the substance of the liver, is one which appears to have been entertained as early as the period when those vessels were first discovered. Asselli, who in 1622 detected the chyloferous vessels in quadrupeds, denominated them chylous veins, and describes them as terminating, like the other veins of the intestines, in the liver. Subsequently, Weslingius, who discovered the same vessels in the human subject, and traced them in their course towards the thoracic duct, states that a large number of them penetrate the liver.

The ancients, who believed that the chyle underwent in the latter organ certain changes, referred its conveyance thence not to the lacteals, but to the mesaræic veins. This opinion has been revived and advocated by several distinguished physiologists of the present day, among whom we may name Magendie, Gmelin, Tiedemann, and Ribes.

The spleen is considered by M. Voisin as an appendage to the liver. Its principal use being to receive and to furnish to the latter blood containing those materials which enter into the composition of the bile.

The heart, by means of its columnæ corneæ, causes, according to our author, a separation of the arterial blood into two distinct portions, which, however, circulate in the same vessels, side by side, but without mixing with each other. The one portion, the most pure, the most aerated, and the lightest, passes into the aorta to the left, and when it arrives at the arch of that vessel is thrown into the three principal branches that are distributed to the superior parts of the body. The other portion, less pure and heavier, is conveyed to the abdominal organs and inferior extremities.

This latter portion of the blood, in its passage through the several secretory organs placed along its route, is deprived of certain of its ingredients, and in

consequence of this successive purification, when it arrives at the lower parts of the body, will be found to differ but little from that which is distributed to the superior organs.

The more impure of the two portions into which the arterial blood is supposed to be divided by the heart, is composed, according to M. Voisin, principally of the chyle newly transformed into blood, and which has undergone but once the process of hæmatosis. It is not adapted, therefore, for the support and vivification of the more important organs, and especially of the brain, until it has been more fully assimilated in its nature to arterial blood. This second process of hæmatosis it is the office of the liver to effect.

This fanciful notion of the division of the arterial blood, by the heart, into two distinct portions, our author attempts to prove by direct experiment. Into the left cavities of the heart of a dog, immediately after the animal had perished from hæmorrhage, he forcibly injected at one and the same time, two fluids differing in colour and consistency; the most fluid being blue, and the other red. On opening the heart and aorta, it was found that the two fluids remained side by side unmixed; the blue occupying the left portion of these organs and filling principally the arteries distributed to the head and superior parts of the body, while the red occupied the right portion of the cavities of the heart and aorta, and was found to fill the abdominal aorta and its branches.

If this division of the arterial blood into two distinct portions be admitted, remarks M. Voisin, it will be seen that the liver, the spleen, the intestines, and nearly all the abdominal viscera, receive a blood, not less nutritive perhaps, but less pure, less homogeneous, than the other parts of the body, but at the same time of a quality which is precisely that adopted for the formation of their various excretions.

The blood which is returned from those organs which separate from it excrementitious fluids is, in consequence of the elimination of the latter, in a state fit for mixing immediately with the common mass of the venous blood. That which is transmitted to the inferior cava by the hepatic and renal veins is of this kind; but that returned from the spleen, having undergone no depuration, cannot return directly to the heart, it must previously pass into the liver and be there deprived of those elements which serve for the formation of bile.

The spleen, then, is an organ for the circulation of the blood the least hæmatosed, upon which it has scarcely any other effect than to change it from arterial into venous.

The large size of the splenic artery, its origin from the cœlic trunk, (*opistogastrique*,) immediately after the entrance of the aorta into the abdomen, and its distribution through a spongy tissue, cause the spleen to be one of the first and principal centres of fluxion for the blood upon its passage from the heart.

The blood of the splenic vein is, according to our author, of a peculiar character. It has already the oily nature of bile, and appears to be composed of the debris of the organs.

To prove that the bile is not necessary for the separation of the chylous from the excrementitious portion of the chyme in the duodenum, M. Voisin adduces, 1stly. The fact that there are animals which are destitute of any organ analogous to the liver, and yet digestion and assimilation are performed in them as perfectly as in such as possess that organ.

Lieutaud, in his Medical Anatomy, (*Lib. I.* 190,) reports an observation of Gaspard Bauhin, under the title '*Hepar deficiens.*' It refers to an individual in the body of whom, after death, no trace could be found of either liver or spleen. The parietes of the intestines were very thick and fleshy, and upon them terminated the branches of the vena portæ. 2dly. That the opening of the ductus choledocus into the duodenum, by which some consider the importance of the bile in chylification to be established, is not invariable in all animals; in some of the inferior classes the excretory duct of the biliary apparatus opens near the anus, which proves that in such animals at least the bile is a mere excrement. 3dly. That the functions of the liver are active in the fœtus before the digestion of food can take place.

"The blood brought from the placenta by the umbilical vein, although arterial, is not, however, sufficiently pure to be distributed immediately to the delicate organs of the fœtus. In passing through the uterine vessels and the placenta it loses in some degree its vivifying properties, and acquires, in part, the properties of venous blood, becoming more gross and oily, and charged with hydrogen and carbon. Of these it is necessary that it should be deprived in the vessels of the liver, which latter acts, in regard to the fœtal blood, the same office nearly as the lungs do in the adult."

The secretion furnished by the liver in the fœtus is the meconium. In examining the composition of the dark-coloured, viscid paste found in the bowels of new-born infants, we find it to be composed of the same elements as the bile. Portal states positively that the meconium is nothing else than bile, and according to the analysis of Vauquelin it is bile mixed with mucus. Thus we find that before as well as subsequent to birth the bile is purely excrementitial. That in the fœtus it is not concerned in chylification is proved by the fact that no chyle is then formed. We can readily conceive that after birth, when the digestive function is fully established, there must necessarily be a considerable difference in the quantity as well as in the quality of the materials separated from the blood by the liver, and consequently in the amount and composition of the bile secreted.

4thly. M. Voisin has attempted to show that the bile is not concerned in the formation of the chyle, by numerous pathological observations, in which, from disease of the liver, the secretion of bile was greatly diminished or entirely suspended, or in which its entrance into the intestines was prevented completely, and yet digestion and assimilation experienced little or no interruption.

5thly. By direct experiment he has shown, that the occlusion of the common duct of the biliary apparatus does not prevent the formation of chyle; provided the passage of the pancreatic fluid into the intestine is not at the same time prevented. In a number of dogs a ligature was applied around the ductus choledocus, so as completely to prevent the entrance of the bile into the intestines. Two of the animals lived three months after the experiment, three survived six weeks, and five died shortly after the ligature was applied; in no instance was death produced by the suspension of digestion or assimilation. Almost all the dogs had commenced to eat, and in the majority there was found in the duodenum food perfectly chymified, and well-elaborated chyle in the lacteals. In one instance, the hepatic and cystic ducts and gall-bladder became enormously distended with bile, and death was occasioned by the rupture of

the coats of the gall-bladder and the escape of the bile into the peritoneal cavity. With the exception of extensive inflammation of the latter, no disease of the abdominal viscera was detected. The stomach and intestines were filled with aliment almost entirely digested, and the lacteals were distended with chyle. Of the latter nearly half an ounce was procured.

Having disposed of the physiology of the liver, and the inquiry into the uses of the bile, M. Voisin considers next the subject of digestion in general. His remarks and experiments in relation to this important process of the animal economy are deserving of very considerable attention. It is not our intention, however, to give, on the present occasion, any thing more than a very brief sketch of our author's views in relation to the various points connected with it; merely noticing, as we pass along, the nature of his experiments and their results.

M. Voisin denies that the process of digestion, properly speaking, is confined solely to any one portion of the alimentary canal. From its entrance into the mouth, until the last portions of nutritive matter are completely separated from those which are excrementitious, in the lower part of the intestinal tube, he insists that the aliment is continually acted upon, and undergoes a succession of changes, the sum of which constitutes the process of digestion. The action of the stomach and its juices, is, he admits, of the very first importance, but by no means, as he has attempted to prove, essential to chyli-fication. Digestion, under ordinary circumstances, during a healthy condition of the body, commences in the mouth, and terminates only when the contents of the intestines have arrived in the rectum.

The identity of organization of the different portions of which the digestive tube is composed, proves, he remarks, that they all assist in producing in the food those changes which are necessary for the separation from it of its nutritive principles, while it enables, also, one portion of the apparatus to supply to a certain extent the defective action of another.

During the short time the aliment remains in the mouth, it undergoes, according to our author, a very important modification. Its texture is broken down by the teeth, and, at the same time, it is intimately mixed with the salivary fluids. In consequence of these acts, its appearance and composition are in a great measure changed. Although the different particles of which the food was composed are still recognisable, yet, after the latter has undergone this, as our author terms it, "first digestive elaboration," they have become much more homogeneous.

The change produced in alimentary substances by commixture with the saliva, M. Voisin maintains, do not, as some suppose, consist in a simple mechanical division and their conversion into a soft paste, by which their deglutition is facilitated; it is something more. By mastication and the action of the saliva, a commencing decomposition is produced in the food. It is well known, that the articles of food which have been the most completely masticated and combined with the saliva become most promptly chymified in the stomach; and when, in place of being swallowed, they are rejected from the mouth, they become sour and putrify in a very short time; which facts M. Voisin adduces as proofs of an actual and very important change having been effected in their composition.

The author submitted food to the action of the saliva at a temperature similar to that of the human body, and found that when the latter was slightly acidified the same changes occurred as are produced by the action of the gastric fluid under similar circumstances.

The food having arrived in the stomach, it is subjected there to the action of that organ and its juices, by which, in a shorter or longer time, according to its nature and other circumstances, it is converted into chyme.

M. Voisin admits the existence of a gastric solvent. Nothing, he observes, disproves the possibility of the secretion of a solvent fluid from the coats of the stomach taking place, at the moment the aliment enters that viscus, in consequence of the peculiar excitation which the latter receives from the presence of the food.

Artificial digestion, as it is termed, although very far from representing exactly that which takes place in the stomach, nevertheless proves very fully, he conceives, the solvent action of the gastric juice.

“Like all the other products of exhalation, the action of the gastric solvent cannot be separated from that of the organ by which it is furnished. Its influence, as we may well suppose, is subordinate to the vital action of the stomach. It is in consequence of its particular state of sensibility and vitality during the period of digestion, that the latter is enabled to furnish a fluid adapted to the solution of the food which it contains, and consequently therefore to its conversion into chyme.”

Hence, according to M. Voisin, the process of chymification is a complicated one, in the performance of which, he insists, we cannot separate the action of the stomach upon the food from that of the gastric juice, and *vice versa*. The stomach is the organ to which the important act of chymification is confided, and the gastric juice a mean placed at the disposal of that organ to enable it to perform its functions.

The gastric juice penetrates, liquefies, and combines with the different articles of food, altering completely their character, and changing their intimate composition, so that they are no longer recognisable. In effecting this change, the gastric fluid is aided by the stomach, which is by no means an inert receptacle, but, on the contrary, takes a very active part in the act of chymification.

According to the observations of M. Voisin, the gastric juice is not supplied merely to an extent sufficient for the solution of the food taken into the stomach, but is always in excess. “It is far,” he also remarks, “from being identical in its properties in all species of animals; it is not so even in the same animal at all times, as Chaussier has very clearly shown. It differs considerably according to the nature of the food which is eaten.” It is sometimes eminently acid; in other cases it is more or less alkaline, changing to green the syrup of violets and other vegetable blues. These facts, M. Voisin states, he has verified by numerous experiments.

“The possibility of my being able to establish in a manner so positive, the character of the gastric juice, under the different circumstances referred to, will, he remarks, no doubt be contested; and this in consequence of the difficulty of obtaining the fluid during the period of digestion, and of separating it perfectly from the food, which might possibly communicate to it an alkaline property, and hence impair the correctness of the experiments. I will merely

state in reply, that when I have desired to test the properties of the gastric juice, I have always experimented with that fluid, when I was certain that it was pure and without foreign admixtures, such as was furnished by an animal to which, after fasting, food was presented, and by that means the exhalation of the gastric juice produced."

The observations of M. Voisin confirm those of Chaussier, Wilson Philip, and numerous others, in proving that chymification always takes place from the circumference of the aliment contained in the stomach by successive layers.

During digestion, remarks our author, the stomach does not remain quiescent; it contracts in a manner continuously, pressing in every direction the food, and after a movement of peristole, which pushes the contents of the organ from its splenic to its hepatic extremity, and from the latter back again, it causes it finally to pass to the pylorus, the resistance of which is overcome, and the chymified portion of the food passes into the duodenum.

The changes which the chyme undergoes in the upper portion of the small intestines are difficult to detect. Every thing induces the belief, according to our author, that they are very analogous to those which take place in the stomach; but what agents, what fluids produce those changes in the duodenum, we are as yet entirely ignorant. Most physiologists are of opinion, that they are effected by the action of the pancreatic juice and the bile, with which the chyme is there combined. That bile, at least, is not essential to chylification, M. Voisin, as we have seen, has attempted to prove, and as we conceive, he has established the fact in the most conclusive manner. In addition to the arguments on this subject already referred to in his chapter on digestion; in the duodenum, he remarks, if the bile be really concerned in chylification, and is the agent by which the chyle is separated from the chyme, the results obtained by testing its action upon the latter out of the body ought to be even more striking than those from the action of the gastric fluid upon food. He however undertook a number of experiments to ascertain the effects produced by the bile upon the chyme, but no chyle could in this manner be produced, nor in fact any change which was not referrible to the sensible properties of the bile.

According to Haller, the changes in the chyme necessary to the separation from it of the elements of the chyle, are produced by the action of the fluids secreted by the intestines in the same manner as the changes which the food undergoes in the stomach are effected by the fluids of that organ. This opinion, founded upon the resemblance, or rather perfect identity of the gastric and intestinal fluids, and the little difference in the appearance of the chyme during its continuance in the duodenum, has, according to our author, very strong presumption in its favour. By conceding its truth, we admit the vital action of the intestines, while by the received opinions, this is entirely lost sight of. M. Voisin conceives that the pancreatic juice has likewise a very important agency in effecting the separation of the chylous from the excrementitious portions of the chyme.

To prove that the solvent properties of the intestinal fluids are similar to those of the gastric juice, the author, from the intestines of animals kept some time from food, procured a quantity of mucus, in which, slightly acidified, he immersed portions of flesh, and kept the mixture at a temperature equal to that of the living body.

“At the end of from twenty-four to thirty-six hours, the flesh was in general converted into a grayish somewhat homogeneous paste. Vegetable substances however, particularly the herbaceous, experienced no change. To effect *completely* the change of the aliment into a chymous pulp, about six hours were required.”

In another series of experiments he introduced into the small intestines of animals a portion of aliment, in the one case masticated and mixed with saliva, and in the other without any preparation, and found that in a few hours in the first instance, and after a longer period in the second, it was as completely chymified as if the process had taken place in the stomach. The same experiments were repeated upon animals in which the pylorus was secured by a ligature, with similar results. One of the animals lived for a month after the pylorus was tied, being nourished during that time by the food introduced into the duodenum.

“As we approach the inferior portion of the ileum, the digestive powers of the intestinal tube will be found gradually to diminish; chymification and especially the absorption of chyle, requiring a longer time for their accomplishment than in the superior portion of the digestive canal, either from the intestinal fluids being furnished with less abundance, or rather because the absorbent surface is here less extensive, and supplied with fewer chyloferous vessels. However we have no reason to doubt that chymification, though less prompt, is nevertheless completely effected, for its most immediate effect, the formation of chyle, is still evidenced. We have recognised the latter fluid in the lacteal vessels and thoracic duct, when it could not have been derived from any other source than the absorbents of this part of the intestinal canal, a ligature having been applied so as to cut off all communication with the upper portion of the small intestines.”

In the cœcum, ascending colon, and a part of the transverse arch of the latter, chymification is still performed, though less perfectly, and the few chyloferous absorbents which exist in this part of the canal, separate from the aliments its nutritive principles. The fact of the formation of chyme in the cœcum and colon is proved by experiments performed by introducing food into these intestines after the ileo-cœcal valve had been closed by ligature.

Thus we perceive that in the different portions of the alimentary canal the food is subjected to numerous successive transformations. That by the action upon it of the saliva, of the mucous and follicular exhalations, the gastric juice, the pancreatic liquor, the intestinal fluids, it is softened, chymified and changed in such a manner as to adapt it for the formation of chyle, while the remaining unnutritious portion becomes by degrees converted into excrement. In fact, remarks our author, this last process of digestion does not occur excepting in aliment that has undergone chymification. Those parts of the food which remain unacted upon by the digestive organs, and of their fluids, are rejected in precisely the same state in which they were taken into the stomach, and do not properly constitute the feces, but are mixed with them.

Although digestion properly speaking is a complicated process, which may be divided into successive periods, it nevertheless presents throughout a perfect unity of action to which concur one and the same class of agents. The same mucous membrane, similar in its texture, sensibility and mode of vitality, extends from the mouth to the anus, and which we have every reason to believe possesses a perfect similarity of function throughout its whole extent.

Digestion consists, therefore, according to our author, in the breaking up of the texture, the solution and preparation of the aliment by mastication, and the different fluids furnished by the mouth, stomach, pancreas and intestines, so as to enable the chyloferous absorbents to separate and remove from it those elements which enter into the composition of chyle. That this separation and removal of nutritive particles from the dissolved and decomposed food commences in the stomach, is peculiarly active in the upper portion of the small intestines, and though still effected, becomes less and less as the chyme passes along the intestinal tube, until it is finally reduced to pure excrement in the rectum. That chyle is formed by the vessels of the stomach, is proved by the experiments of M. Voisin. If we open the stomach of an animal two hours after it has eaten, he remarks, when we suppose that digestion is in full activity, we observe upon the surface of the chyme a fluid of a grayish-white, the same as in the duodenum; if by a ligature we arrest the course of the fluids through the gastric absorbents, these will become swollen and enlarged, and by dividing them we procure a white liquid, which is precisely similar, excepting that it is rather more serous, to that obtained from the same order of vessels which have their origin in the duodenum.

“I have nourished during fifteen days a dog, around the duodenum of which I had passed a ligature immediately below the pylorus. Its appetite for food was excellent, the animal eating frequently, but little at a time. As soon as the stomach had separated the nutritive principles of the food, the remainder was rejected by vomiting, or rather by a kind of regurgitation. It is proper to remark that the rejected portion was less altered, less excrementitious than if it had been discharged after passing through the whole length of the intestines.”

“The existence of chyloferous vessels in the stomach being well established, the formation of chyle in that organ cannot be questioned. It hence follows that the presence of bile is not indispensable to the accomplishment of chylofication.”

The remaining chapters of M. Voisin's essay are devoted to an examination of the morbid affections of the liver, with a view of deriving from them evidence of the nature and uses of the bile. The author presents some very interesting views of the pathology of the liver, and particularly of the causes of jaundice. Of these, however, we cannot on the present occasion present any thing like a satisfactory sketch, and shall therefore be obliged to close here our notice of the very interesting and in many points of view important observations of the author. His views of digestion are generally speaking highly plausible, and we are convinced will be found correct when tested by a series of experiments similar to those reported in the essay before us. D. F. C.

XVII. *Dictionary of Practical Medicine, &c.* By JAMES COPLAND, M. D. Parts I., II. 8vo. London, 1833-4.

The first and second parts of the *Dictionary of Practical Medicine* exhibit the industry, learning, and general talents of Dr. Copland in a very favourable point of view. In reference to the subjects comprised in these portions of the work, he has evidently consulted with considerable care the writings of the most authoritative physicians, whose opinions and experience are stated with accuracy,

and not unfrequently collated with skill. Whether, however, Dr. C. has always made the best use of the materials thus collected, and arranged them in the manner best adapted for easy reference, and for conveying to his readers an accurate view of the present state of medical knowledge in reference to the several topics discussed, are questions which will admit of very considerable dispute.

We confess that we commenced our examination of the work with expectations which have not by any means been realized. The praises bestowed upon it by some of the English journals immediately after the appearance of the first part, and the fact of its being recommended in the strongest terms by one or two of our leading physicians as a practical treatise, well adapted for the use of American physicians, led us to believe that we should find it to be throughout an able digest of the present state of medical science. In this however we have been disappointed. The dictionary of Dr. Copland is, strictly speaking, a treatise on the causes, symptoms, and treatment of the more prominent diseases of the human organism, arranged in alphabetical order. Consequently the various subjects embraced under the heads of anatomy, physiology, materia medica, pharmacy, obstetrics, and operative surgery are excluded.

The leading doctrines of the day in relation to the correct etiology and pathology of disease, are but slightly touched upon, while the author's own views in connexion with these important points, are in many instances extremely vague and unsatisfactory—being rather crude hypotheses than legitimate deductions from well-established facts.

The correctness of this assertion might be established by numerous quotations from that portion of the work which lies before us; the following however from the article apoplexy will suffice for the present.

“A careful consideration of the morbid appearances on dissection, (in apoplexy,) in relation to the symptoms, and to analogous changes and their phenomena, have led me to infer that compression of the brain never can take place; that *pressure* exists in the great majority of cases, but even that it is not indispensable to the apoplectic state, and that, although *retarded* circulation, whether caused by pressure, or by any other state, seems very frequently to obtain, it does not constitute the only morbid condition of the brain in apoplexy; or in other words, that apoplexy is not merely a disease of the vessels of the brain, although these vessels are either consecutively or consentaneously affected.”

“The circulation of the brain, like that of other important organs, is chiefly under the dominion of that portion of the ganglial system of nerves which is ramified on its blood-vessels, and is distributed otherwise to the organ itself, and an exhausted or morbidly depressed state of the influence those nerves exert on the circulation and manifestations of the brain, with the consequent effect this state has upon the capillaries, particularly in dilating or congesting them, and disposing to their rupture, is the principal cause of, and often constitutes the apoplectic seizure, whether this influence emanate from their chief centres, or from the local sources provided for the peculiar offices of the organ, as the pineal and pituitary glands.”

“From this it may be inferred, that the proximate cause of a large proportion of the cases of apoplexy, not omitting even those which are attended with retarded circulation and hæmorrhage, is here imputed primarily to the condition of that part of the ganglial system, which supplies the blood-vessels of the brain and the brain itself. That this actually is the case, is shown (how?) by the nature and mode of operation of the remote causes of the disease; by the fre-

quent affection of the functions of the brain previous to an attack; by the nature of the principal part of the phenomena accompanying the attack; by the disorders observed subsequently, when partial recovery takes place; by the tendency to relapse, and by the morbid appearances which present themselves on the dissection of fatal cases."

"That a congested state of the vessels and retarded circulation of the brain should exist, owing to the diminished or exhausted, or suppressed state of that influence which undoubtedly actuates the vessels, may readily be conceded; but that even in the brain the effusion of a small portion of blood should occasion pressure sufficient to *interrupt* the circulation through it, requires further proof. It seems more probable and consonant with facts observed in other parts of the body, that in cases where the extent of effusion or external injury warrant the admission of pressure, this state gives rise to the apoplectic seizure, as much from the effects it produces upon the ganglial apparatus of the encephalon, as from *interrupted* circulation through its vessels."

"The frequent *inflammatory character* of apoplexy, or the common occurrence of *reaction*, will be readily accounted for, from what has now been stated, for whether the attack commences with dilatation, or increased action of the arterial capillaries, or with exhaustion or deficiency of their vital power, or with retardation of the circulation through the brain and venous capillaries, the result will generally be augmented action of the arteries going to the brain, extending itself in some manner to the heart, and this state will continue until the abolition of the cerebral functions shall have impaired, or otherwise destroyed the heart's action."

"When apoplexy proceeds from causes of an obviously *exciting nature*, or from *sur-action* of the heart and arteries, it seldom occurs until a certain degree of exhaustion of the vital tone of the capillaries has taken place, whereby they become dilated and congested, so as either to press the encephalon against its unyielding case, and owing to the pressure, impede the return of blood by the veins, or to give rise to extravasation, which, when considerable, has a similar effect; injection of the arteries of the brain and its membranes resulting equally from both, owing to the obstructed circulation through the veins."

"There are cases of apoplexy generally presenting the phenomena which have given rise to the appellation of *weak apoplexy*, which, occurring from *depressing causes*, operating upon exhausted states of the encephalon and frame generally, directly suppress or abolish the vital influence of the organic or ganglial nerves of the brain, and consequently the cerebral functions, without producing further change of its vascular system than retarded circulation to so slight a degree as not to amount to great distention and compression, and without occasioning extravasation of blood, although extravasation often does supervene to this state, giving rise to pressure and its consequences, so as to heighten or prolong the primary lesion, and to occasion paralysis."

It is not our intention to enter upon a formal review of the several articles comprised in the first and second parts of Dr. Copland's dictionary; neither do we pretend to deny the correctness of the author's pathological views in relation to apoplexy as set forth in the above quotations; we merely present them to our readers, who, however much they may be pleased with the apparent simplicity of those views, must nevertheless receive them as a mere hypothesis, in the establishment of which, the author has not adduced any striking fact or argument.

The following sentence from the article *debility*, will show the nature of the leading error in the pathological reasoning of Dr. Copland, and one which has, in too many instances, extended its prejudicial influence to his practice.

"Debility is a state of vital manifestation intimately connected with the nature

of disease; and, in whatever acceptation it may be understood, it has been admitted by every physician who has looked beyond the proper and more palpable changes superinduced in the economy, as not only a most important pathological condition, but as often constituting what is, in the common language of medicine, disease itself."

Debility, (diminished vital energy,) produced either directly or indirectly, is made by Dr. Copland to play a most important part in the production of the various groups of morbid phenomena, constituting the diseases of the nosological writers. We need not wonder, therefore, that the author's therapeutical directions should have for their primary and most important object the removal of that debility with which he conceives all diseases, when it does not constitute their very essence, to be so intimately connected. The author is in fact more liberal in the employment of stimulants and tonics than most other English physicians of the present day. Even in apoplexy, while he admits the importance and necessity of venesection and other means of direct depletion when the case is one marked by a flushed face, full and strong pulsation of the carotids, and other striking symptoms of undue determination to the brain, yet in what he denominates *weak apoplexy*, or that very frequent form of the disease, in which the countenance is sunk, the head cool, and the action of the carotids weaker than natural, he forbids the abstraction of blood as well during the premonitory stage of the attack as after the apoplectic seizure has taken place, and directs an immediate resort to restoratives, antispasmodics, tonics, and stimulants. Some of the remedies directed during the apoplectic fit, are camphor, ammonia, ether, and compound tincture of lavender.

Catarrh, according to Dr. C. consists in a *specific* irritation of the mucous surface of the nostrils, extending to the frontal sinuses and eyes, the posterior nares, fauces and throat, and occasionally to the pharynx, œsophagus, glottis and trachea. While the disease is limited to the cephalic mucous surfaces, he directs a judicious exhibition of stimulants. Even after pectoral symptoms have appeared, in some constitutions, he declares, that little or no risk will be incurred of inducing inflammatory action by the same measures.

In diffusive inflammation of the cellular tissue "however great," he observes, "the severity of the pain, or the sensorial excitement; or however frequent, open, sharp, or bounding the pulse; these symptoms should be arguments against, rather than in favour of venesection."

Dr. Copland appears, indeed, to have a most decided aversion to the lancet. It is true, in many instances he directs in general terms the employment of active depletion by the lancet, and under precisely the same circumstances in which it would be resorted to by our own physicians; but when he enters into details, his active depletion will be found to be restricted to the abstraction of a few ounces of blood in the early stage of the case; while even the taking away of this trifling quantity is surrounded by so many minute precautions that we are persuaded whoever should adopt the work before us as his manual, would most assuredly become an irresolute and inefficient practitioner. The necessity for husbanding the patient's strength, and the danger of inducing early and dangerous exhaustion, directly or indirectly inculcated by our author, would unquestionably deter an inexperienced physician from carrying the use of the lancet to that extent which is so essential, in many of the forms of dis-

ease occurring in this country, in order to avoid a protracted illness, or even to rescue the patient from the grave.

As the Dictionary before us has been strongly recommended to the notice of American physicians, we extract the following paragraph in order to show the opinion of the author in regard to the character and professional skill of some portion of the medical public of this country.

“Although opium should be given (in delirium tremens) in full or decided doses, combined as stated above, (in from one to three or four grains—the smaller quantity being repeated twice or thrice, the larger not oftener than once, and after a longer interval,) it should not be persisted in, unless sufficient time be allowed to elapse after each dose; for, as Dr. Pearson has observed, if it does not succeed after its exhibition at first in a decided manner, it increases the intellectual confusion and danger. Some of the American physicians have recommended enormous doses of this medicine. Dr. S. Brown gives from $\mathfrak{z}\text{i}$. to $\mathfrak{z}\text{ss}$., or even more, of laudanum for a dose. Dr. S. Jackson prescribes from ten to fifteen or even twenty grains of solid opium every two hours; and states, that four ounces of good laudanum having been given in twelve hours, partly by mistake, a sound sleep of twenty-four hours’ duration, and perfect recovery, were the result. I am only surprised that the sleep was not that of death. These are not solitary instances of the extravagance, if not rashness, of some American practitioners; nor, indeed, has the practice of giving excessive doses of laudanum in this affection been limited to them. When we find thirty or forty leeches ordered to be applied to the throat of a child five or six years old in croup, and repeated oftener even than once, and the bleeding promoted, should we wonder that death ensues? Feats of hardihood in medicine are too often the consequence of *clerical* and *practical ignorance*; and they may be allowed to meet their own reward, as long as they are not obtruded into the annals of our science, and thereby set forth to the inexperienced as examples to be followed. But when this distinction is conferred on them, it becomes the duty of those who record the progress of medicine, to note also, and to oppose, its backslidings by the severest reprehensions.”

C.

XVIII. *Essai sur le Madar, (Calotropis Madarii Indico-orientalis,) contenant l'Histoire Naturelle de cette Plante, ses propriétés Physiques, Chimiques et Médicinales.* Par J. N. CASSANOVA, C. M. D. &c. &c. Calcutta, 1833. pp. 69. 8vo.

The Madar, or Mudar, as it is termed by Ainslie and Wallich, has long enjoyed the highest reputation in India as a remedy in leprous and cutaneous affections. It appears that there are a great number of roots known under this name, all however derived from different species or varieties of asclepias; that which is the most esteemed is the *Seifide* or white Madar. Almost all writers on the medicinal plants of India have considered this as the root of the *Asclepias gigantea*, (*Calotropis*, Brown,) but Dr. Cassanova has shown that this idea is erroneous. The proofs he has adduced in support of his assertion, although interesting to the botanist, are of little importance to the physician, as it is evident, from his own admissions, that the medical properties of the *Calotropis gigantea* and the *C. madarii* are identical. It appears that the madar has also been naturalized in the West Indies, where it enjoys full as much reputation for its curative powers as in its native country. The part used in medicine is the cortical

portion of the root deprived of its epidermis. This is of a whitish colour, with little or no smell, and of a bitter and slightly nauseous taste. From an analysis of it by our author, it appears that it contains—1. An extractive substance, (*Madarine*,) soluble in alcohol and water, and which is probably its active principle, 5.00. 2. A resin remarkable for its property of not liquifying at the temperature of boiling water, and by its slight solubility in alcohol, 4.00. 3. A gum probably containing some madarine, 8.00. 4. A large quantity of starch. 5. Albumine. 6. A little fixed oil. 7. Ligneous fibre.

The medicinal properties of the madar are undoubtedly of a high order, and we have the concurrent testimony of a number of eminent practitioners in support of its efficacy in the obstinate cutaneous affections of tropical climates. Mr. Robinson* speaks of it in the most exalted terms in elephantiasis and venereal affections; and Mr. Playfair† states that he has found it of the greatest service in lepra, hectic fever, &c. in doses of grs. iij. to xii. three times a day, gradually increasing the quantity. Ainslie, however, thinks that the dried milky juice is possessed of more decided powers.

Dr. Cassanova has given it a more extended trial than any of the above-mentioned practitioners, and has been fully satisfied of its importance as a therapeutic agent. He states, that its action is more particularly directed to the skin, increasing the action of the capillaries and absorbents of that tissue. When combined with opium it acts as a diaphoretic, and in small doses is expectorant and tonic. In large doses it causes nausea and vomiting. He has been very successful in the cure of chronic ulcers by the use of this remedy, in small doses, three grains twice a day.

It is evident, from all that we can gather on the subject of the madar, that it is a valuable addition to the materia medica, though not likely to come into use in this country, as we have an excellent substitute for it in the roots of several closely allied species of plants, viz. the *Asclepias syriaca*, and the *Apocymum androsæmifolium*, and *A. cannabinum*, all of which possess analogous properties; the latter especially deserves the attention of practitioners in the same class of diseases in which the madar has been so successfully employed. The experiments of Dr. Mears and Griscom with this plant show, that in chemical composition and remedial powers it is almost identical with the *Calotropis*.

R. E. G.

* Medico-Chirurgical Transactions, Vol. X.

† Ibid. Edinburgh, p. 414.

QUARTERLY PERISCOPE.

FOREIGN INTELLIGENCE.

ANATOMY.

1. *Malformation—Absence of Anus—Recto-Vaginal Canal.* By M. RICORD.—I was consulted a few days since, by a girl, twenty-two years of age, who requested to be examined, saying that her lover accused her of having communicated to him a blennorrhagia, which was utterly impossible, as she never had connexion with any other person; she also asserted that she was not made like other women, and begged me in consequence to pay a little more attention than common to her case. Having been frequently consulted by many females on pretended deformities, which consist in nothing more than a slight prolongation perhaps of one nymphæ, or of the carunculæ myrtiformes, I am not in the habit of attaching much importance to their stories on this subject. The external genital organs did not present any thing remarkable or morbid, and the speculum was immediately introduced with facility. The parts which embraced its extremity were perfectly healthy, and did not offer any thing abnormal or morbid to the eye. However, the depth to which the instrument was carried without meeting the neck of the uterus began to excite some astonishment, when a lump of fecal matter was brought into view, simulating to the touch the os uteri, and also some grape seeds, which were at first taken for vegetations. Being now convinced that some malformation existed, as the girl had at first mentioned, M. Ricord examined the organs of generation with the greatest care, and found the parts in the following state: the labia majora and minora, the clitoris and its prepuce were of the regular size, and well formed; the meatus urinaris was placed in its accustomed situation, and did not offer any thing particular; the posterior commissure of the vulva and the fourchette were also in the normal state; but on examining the perineum, we could discover no trace of anus; the place which the orifice should naturally occupy was marked by a brown spot, irregularly radiated, about the size of a shilling, and without any hair, although the mons veneris and vulva were overshadowed with a great abundance of this material. The ring of the vulva, which did not present any carunculæ myrtiformes, was furnished with eccentric folds formed by the mucous membrane, and engaged a certain power of contraction much less than that of the sphincter ani, but much more powerful than that of the common constrictors of the lower part of the vagina. Beyond this vulvar ring the finger penetrated without causing any uneasiness into a kind of canal, which from its situation and functions deserved the name of recto-vaginal. The speculum, which did not produce the least pain when introduced, exposed to the view a mucous membrane, deprived of those transverse ridges so commonly found in the vagina; and when pushed on to its full length without meeting the least

prominence or line of demarcation, it was arrested by fecal matter. When a finger was placed in this canal, while a female sound was introduced through the urethra into the bladder, nothing was felt between them except a septum, which might be compared to the utero-vaginal, or recto-vaginal wall. The toucher, exercised in every possible direction, and the speculum introduced to the greatest depth the instrument would permit, did not discover the least trace of a uterus. Upon questioning the woman with respect to the processes of defecation, menstruation, and sexual intercourse, M. Ricord discovered the following particulars; the fecal matter was always passed by the vulva, and was perfectly under the command of volition, but gaseous fluids often escape involuntarily: when the fecal matter presented itself at the orifice of the vulvar ring, she felt a desire to go to stool, and when this desire was satisfied, the finger introduced as deeply as possible, no longer met with any obstacle; the female besides has always taken care to use an injection immediately after, and to wash herself well, by which precaution she always kept herself clean. Menstruation has never made its appearance under any form, and no trace of blood has ever been discovered by her in the urine or feces. Although she has lived for three years with the same man, the latter has never appeared to have suspected or known the existence of any malformation; the first sexual intercourse which she had was not accompanied with any pain, for there never was any hymen to break, and the construction of the vulvar ring was feeble in this young woman. She feels the desire of sexual intercourse; however, she says, that according to the account she received from her female friends, her own desires are less strong, and her enjoyment not so great as in others of her sex. Finally, this girl is tall, slender, well made, her form and physiognomy are those of the female; the bosom is well developed, and has never experienced since the age of puberty any sudden change of volume, her voice is soft and sweet like that of a female. Before we terminate this observation, the practical and moral consequences of which may be readily deduced, we may notice that in three days this young female, who was not ill at the time of her first visit, returned with a urethral blennorrhagia, without any affection of the vulva or recto-vaginal canal.

2. *On some points of the Anatomy of the Eye.*—Some anatomists have denied the existence of the *conjunctiva* upon the cornea; Henle has settled this question; he has injected the vessels of the conjunctiva, and observed them to pass beyond the border of the cornea. That part of the conjunctiva which is attached to the cornea is considered as a serous membrane by Arnold, and that which covers the sclerotica, according to the same writer, constitutes the transition of the mucous to the serous tissues.

The *sclerotica* and *cornea* are continued one into the other, at least in part, according to Fränzel and Arnold. The latter has not found nerves in the cornea; but Schelmm has seen them in the eyes of oxen, and in the eyes of a stag; these nerves arise from the superficial ciliary nerves and dip into the border of the cornea but cannot be traced further.

Arnold and Fränzel both agree in considering the *choroid* as a simple membrane, and in maintaining that its division into two layers is artificial.

Arnold asserts that the *iris* is a simple membrane, which does not possess muscular fibres, but is composed solely of nerves and blood-vessels.

Much difference of opinion has existed respecting the termination of the *retina*. Fränzel admits with Zinn that this membrane terminates at the origin of the ciliary processes by an even and well-defined border. Henle has seen this termination at half a line from the zone of Zinn; whilst Arnold maintains that the retina lines the ciliary processes, and terminates like them at the border of the crystalline capsule. Finally, Huschke asserts that the retina covers the ciliary processes, and terminates with the choroid at the origin of the iris. The central foramen of the retina has been but rarely seen by these different ana-

tomists; but the fold of the retina has always been observed, and considered by Huschke and Stark as the cicatrix of the fissure, which, in the fœtus, traverses all the coats of the eye, but persists longest in the retina. Stark attributes the yellow spot to a pigment secreted by a vessel of the choroid which penetrates the retina in this spot to proceed to the vitreous humour.

The *ciliary ligament* is composed, according to Eble, of a gelatinous substance contained in a cellular tissue, of vessels, and finally, of nerves, which form in this ciliary ligament a true plexus, which probably sends filaments to the ciliary processes. Ammon and Arnold maintain, on the contrary, that this ligament is principally formed by cellular tissue, and has not the least analogy with a ganglion or plexus.

Some anatomists assert that the *membrane of Demours*, or of the *aqueous humour*, after lining the anterior chamber is reflected upon the anterior face of the iris. Arnold is not of this opinion; he believes that this membrane forms a closed sac as long as the pupillary membrane exists, and that consequently it does not cover the urea. Henle combats these two opinions; he contends that the membrane of the aqueous lines the posterior surface of the cornea, passes beyond the junction of this last with the sclerotica, and extends some distance between this latter membrane and the ciliary ligament, without being reflected upon the iris.

The *crystalline capsule* is composed, according to Arnold, of two membranes, of which the exterior is cellular, and abundantly supplied with blood-vessels, whilst the interior which is serous, has none, but possesses lymphatic vessels. The blood-vessels of the posterior parietes of the capsule come from the central artery of the retina; the anterior parietes receives its own from the vitreous humour and ciliary processes. Henle, however, has only once found the vessels in the anterior parietes of the crystalline capsule injected; this was in the fœtus of a sheep; these vessels arose from the posterior parietes of the capsule. An anonymous writer, (*Ammon's Zeitschrift*, B. II. p. 430,) announces a singular fact, which appears to merit investigation; this author asserts that he has seen in the fœtuses of sheep and sows, branches of the *central artery of the retina* ramify in the posterior parietes of the crystalline capsule, afterwards in the anterior parietes of this capsule, and finally, anastomose with the *venous* branches of the pupillary membrane at the margin of the pupil.

According to Arnold the *crystalline lens* is composed of capsules, the parietes of which are formed by lymphatic vessels. Huschke, on the contrary, who has made numerous microscopic researches into the texture of the crystalline, maintains that it is fibrous. It results from these researches that in the fœtus and in the infant, the crystalline is divided into three segments by three fissures; in each of these segments the fibres form a curl, (*tourbillon*, *Wirbel*;) as the individual becomes older the curls subdivide, and new fissures form, which are all directed from the centre towards the circumference; in adults from 10 to 13 are found. The number of fibres of the superficial capsule of the crystalline is from 3120 to 4000 in a man of fifty years.

The *zone of Zinn* is, according to Arnold and Huschke, only a continuation of the hyaloid membrane; Henle, on the contrary, maintains that the zone of Zinn cannot be a continuation of either the membrane of Jacob, or of the retina, since this zone has vessels which come from the choroid. That the two first of the membranes mentioned have no vessels at all, and that the retina does not furnish its own to the zone of Zinn; this last assertion is however contested by the anonymous author above quoted.

Between the different principal coats of the eye modern anatomists have found membranous lamina, respecting the extent and nature of which anatomists have not agreed. They are generally considered as serous. Huschke admits the existence of a *serous membrane* between the sclerotica and choroid, and believes that it is continuous with the membrane of the aqueous humour; another serous or *membrane of Jacob*, between the choroid and retina; and a third, *vascular lamina*

of the retina, between the retina and hyaloid. Arnold and Fränzel have also seen the serous membrane which separates the sclerotica from the choroid; the first terms it the *arachnoid of the eye*; the latter thinks with Huschke that it is continuous with the membrane which lines the posterior face of the cornea. The membrane of Jacob, according to Arnold, is only a mucilaginous layer which forms after death. Henle doubts likewise the serous nature of this membrane, which he has never been able to trace as far as the ciliary body, and in which he cannot discover any vessels. Fränzel and Ammon, on the contrary, assert, that the membrane of Jacob lines the choroid and ciliary processes, and is attached to the capsule of the crystalline. This termination is formed, according to Ammon, by filaments which extend from the ciliary processes to the exterior face of the crystalline capsule, and constitute what this physician has called the *capsulo-ciliary circle*. The *pupillary membrane* has been particularly examined by Henle. This author has seen that membrane arise, as was first stated by Rudolphi, from the exterior portion of the iris, and not from the margin of the pupil; in large eyes the distance from this border to the point where the membrane arises was a quarter of a line. Contrary to the opinion of J. Cloquet, Henle has never observed the pupillary membrane tense; but always convex either anteriorly or posteriorly. He further states that the French anatomist and Blumenbach were wrong in denying the existence of the internal arterial circle of the iris in the fœtus. He has also seen some very delicate blood-vessels in the centre of the pupillary membrane, of which, according to Cloquet, it is completely deprived. Henle has injected the vessels of the pupillary by the internal jugular vein, and has also succeeded by the arteries; but he has never succeeded in injecting the veins after the arteries were injected; the injection was always effused between the retina and choroid.

This same anatomist believes that he has discovered, with professor Müller, of Bonn, a new membrane, which he names *capsulo-pupillary*, and which arises from the same place as the pupillary membrane upon the exterior face of the iris, folds over the border of the pupil, and proceeds to attach itself to the crystalline capsule where the zone of Zinn terminates. Henle states that he has observed this membrane in the fœtus of all animals, (sheep, calf, deer, cats,) which he has dissected, but that he has not found it in the human fœtuses, those which he examined having remained too long in alcohol.

The capsulo-pupillary membrane receives its vessels from the central artery of the retina, and transmits them to the pupillary membrane, which appears to be only a continuation of the first membrane. Arnold and the anonymous writer already quoted, deny the existence of this false membrane; they attribute the error of Henle to the method he pursued for the discovery of the capsulo-pupillary membrane, a method which consists in opening the posterior chamber of the sclerotica, and inverting the iris with the pupillary membrane. By this process a part of the crystalline membrane or of its exterior lamina alone remains attached to the pupillary membrane, to which the crystalline capsule is always more or less adherent. The capsulo-pupillary membrane cannot then, according to these authors, be any thing but a lamina of the crystalline capsule.—*Archiv. Gén. June, 1833.*

3. *Anomaly in the Venous System.*—A curious instance of this has been communicated to the Anatomical Society of Paris, by M. PÉYGOT. A free communication existed between the two sides of the median line, between the crural and iliac veins on the one part, and the umbilical vein, unobliterated, and the vena porta on the other. This communication was established by means of the abdominal tegumentary veins, which were so enormously enlarged as to cover in the shape of two vast pyramidal tumours the anterior parietes of the abdomen. This communication between the iliac vein and the vena porta formerly noticed by Lieutaud, and more recently by MM. Manec and Ménière, constitutes a normal state in several reptiles.—*Rev. Méd. Feb. and May, 1833.*

PHYSIOLOGY.

4. *Tubercles Developed in the Origins of the Third, Fifth, Seventh, and Eighth Nerves—loss of Hearing, Sight, and Smell—Preservation of the Sense of Taste, and of the Sensibility of the Integuments of the Face.* By M. NELATON.—Feret, a girl, twenty-one years of age, was admitted into the Hôtel-Dieu on the 10th of March, the immoveable expression of her countenance, her projecting and fixed eyes; and her slow manner of speaking, seemed to indicate the presence of idiocy in this female. She complained of constant pain in the head; six years ago she commenced to experience these pains, and since that period the sense of hearing has gradually failed, and within three months she has lost the power of smell. The sensibility of the skin remained unaffected, both on the face and rest of the body. Voluntary motion was freely exercised on both sides with vigour; the sense of hearing was nearly lost; the voice, which had become feeble when she first entered the hospital, was soon lost altogether; when the point of a stilet was moved along the surface of the ocular conjunctiva, it did not excite the least mark of sensibility, although the membrane was dry, and evidently much inflamed. The whole surface of the nasal fossæ might also be touched with a stilet introduced into the nostril, without the patient being conscious of it; ammoniacal paste, when placed under the nostril, seemed at first to produce no effect, but in a few moments excited efforts to cough. The peculiar sense of the tongue was however unimpaired, for the patient recognised salt when placed in the mouth; the general sensibility of the tongue was also unaffected, and the gums were in a healthy condition. The patient died suddenly on the 3d of May. On the examination of the body, the middle portion of the brain and the medulla oblongata were found much developed; the olfactory and optic nerves did not present any morbid appearance during their whole course; the fourth pair of nerves, the external ocular motor of the left side; the glossopharyngeal and hypoglossal nerves seemed also free from any lesion; but all the other nerves of the brain were increased to at least three times their natural volume; small spheroidal tumours, of two or three lines in diameter, were developed in the interior of the nervous chords, or attached to their sides. Some of these tumours were perfectly well defined, though without cysts, and others were irregular in their forms. They were all formed by a yellow opaque matter, similar to that which is found in the centre of tubercles imperfectly softened, and the nerve itself suddenly contracted in size, after having traversed this tubercular mass. The two common motor nerves of the eye were implanted on the summit of a cone formed by this substance, which was also found in the fifth nerve on both sides, but at variable distances from their point of origin; a small tubercle, half a line in diameter, was attached to the origin of the external motor nerve of the right side, but the greater part of the nervous filaments passed above it, and were not altered. The seventh nerve was diseased from its origin to the bottom of the meatus auditorius internus; the pneumogastric nerve was also diseased in the same manner, for the extent of an inch below its exit from the foramen lacerum posterius; the optic and olfactory nerves did not present any morbid change of structure in their whole extent.—*Lancet*.

5. *Functions of the Lingual Nerves.*—MM. CHOÏSY and MONTAULT, have communicated to the Anatomical Society of Paris, a case which throws considerable light upon the functions of the different nerves of the tongue. A man, thirty-three years of age, had paralysis with atrophy of the left side of the tongue; the sense of taste remained unaffected on both sides. The patient died with symptoms of compression of the superior portion of the spinal marrow. On post mortem examination, the muscles of the tongue on the left side only were found atrophied, and the corresponding hypoglossal nerve. The atrophy of the nerve extended to the place of its exit from the cranium, where it was compressed by hydatids. Some hydatids were also found around the

superior portion of the spinal marrow, the functions of which they impeded. The lingual nerve was normal; the left glosso-pharyngeal appeared to have been compressed—the patient towards the close of life had had paralysis of the organs of deglutition.—*Rev. Méd. February and March, 1833.*

6. *Instance of Superfoetation.*—A married woman, aged twenty-two, was delivered January 25th, 1832, in the Lying-in Hospital, at Berlin, of twins. The children were both girls, and died in two hours after birth; their birth took place before the end of the seventh month from the date of pregnancy. One child was white, the other evidently a half caste, as was indicated by the shape of its head, and by the colour of its face, hands and feet, which resembled that of persons who have been tinged by taking nitrate of silver in large doses. The same difference of colour was strikingly evident in the umbilical cords of the infants! but not in the membranes of the placenta. On inquiry it appeared that she was in habits of intimacy with a negro, shortly after or at the time she had conceived by her husband.—*Dublin Journal, Hecker's Annales.*

7. *Life and Respiration continued After the total Destruction of the Brain.*—A deformed woman was delivered with the crotchet in 1828. In 1830, she again became pregnant, and it was resolved after fruitless trials with the forceps to effect delivery by destroying the child's head. Doctor Beyer performed this operation, took away both parietal bones, entirely emptied the cranium of brain, and then extracted the infant, which was wrapped in a towel, and laid near the stove. Dr. B. being engaged in endeavouring to extract the after birth, heard a sort of wimpering issue from the place where the child lay. In about three minutes the child uttered a distinct cry, when Dr. B. opened the cloth, and was astonished beyond measure at finding the brainless infant breathing, and moving both hands and feet; an occasional cry, and the other signs of life continued for several minutes, when the infant at last died.—*Ibid.*

PATHOLOGY.

8. *Case of Anæmia of the Kidney.* By JAMES WYNN, Esq.—The following case of anæmia of the kidney lately came under my observation, and was remarkable from the circumstance of its not having presented any symptoms, which could have led to a suspicion of the organic changes which must have been going on for a considerable time previous to death.

January 13th. J. B., aged 50, a weaver. There is extensive œdema of the trunk, face, and limbs, and particularly of the scrotum, which measures sixteen inches in circumference. States that he had been labouring under more or less œdema of the legs for three years, but that it was only within the last three months that the swelling of the belly and scrotum appeared. The principal symptoms which attracted attention were the universal anasarca above mentioned, increased action of the heart, accompanied with bellows murmur, and very loud bronchial respiration in the upper and anterior portion of the left lung. These symptoms continued with very little alteration, excepting some diminution of the swelling of the scrotum from the use of elaterium, for about a week, when attention was directed to the state of the urethra, on account of his complaining of making water very frequently in small quantities, and attended with difficulty and pain in passing it. Upon attempting to introduce a catheter, a stricture was discovered near the bulb of the urethra. By the use of the catheter, leeching, &c. he was enabled to make water a little freer, and with less pain, but this amelioration was of short duration. Vomiting, of a grayish fluid, came on a few days afterwards, accompanied with extreme debility, and which symptoms continued with little intermission until his death, which took place shortly afterwards.

Necrotomic examination—Chest.—Left ventricle of the heart considerably hypertrophied without dilatation, and a similar state of the right, but not to so great an extent. Lungs gorged with serum, and the upper portion of the left lung considerably advanced in the first stage of hepatization. *Abdomen*—Peritoneum contained about six ounces of fluid. Liver, stomach, spleen, and intestines, apparently quite healthy. Both kidneys were of an unusually pale colour, and upon making incisions through them, their cortical portions were found to have degenerated into a fibro-cartilaginous substance of a pale-yellow colour; the tubular portions were quite sound, excepting one or two points where a few of the uriniferous tubes appeared to have taken on the same diseased action. Mucous membranes of the calyces and pelvis were of a natural consistence, and no where injected. Bladder very much contracted, and contained a small quantity of turbid urine; sub-mucous cellular tissue indurated and thickened to the extent of a quarter of an inch; mucous membrane very much injected, but of the natural consistence. Prostate gland—texture *quite* natural, size *normal*—a firm old stricture was discovered in the membranous portion of the urethra, and the remains of a false passage.—Head not examined.

Remarks.—This case, as thousands of others have done, proves the fallability of general signs, and the superiority of physical, as shown by the appearances found in the chest, and those in the abdomen. The former were indicated before death, but the affection of the kidneys presented no signs, by which any notion could have been formed respecting the nature of the lesions discovered on inspection. It is satisfactory, however, to learn, that even if the precise nature of the disease could have been discovered, medicine would have been of little avail, at least when the structure of the kidneys had become so extensively diseased as it must have been at the time he applied for medical assistance; although, it is probable, the disease might have been arrested, could it have been discovered and properly treated at the outset. The original cause of this affection I consider to have been the habitual dysuria produced by the stricture, and which ultimately led to atrophy of the kidneys from the mechanical impediment it must necessarily have caused to the functions of those organs. That the lesions were owing to anæmia and not irritation, I think probable, from the circumstance of the mucous membrane and tubular portion of the kidneys being quite healthy, whilst the *secerning* portions were perfectly bloodless.—*Glasgow Med. Journ. April, 1833.*

9. *Case of Hypertrophy of the Muscular Coat of the Stomach.*—Dr. OTTO, of Annaberg in Saxony, relates in *Hufeland's Journal*, for February, 1833, an interesting case of hypertrophy of the muscular coat of the stomach, a pathological condition of rare occurrence. Morgagni, Haller, Baillie, do not mention it. Meckel in his *Pathological Anatomy*, only observes in a general manner, that the parietes, especially the muscular coat of the stomach of great eaters, are thick. Beclard in his additions to Bichat's *General Anatomy*, does not notice this kind of hypertrophy, and speaks only of that of the heart and bladder. Louis has noticed this subject more particularly than any other French writer, in his *Anatomico-pathological Researches*. When treating of cancer of the pylorus, he quotes two cases of hypertrophy of the muscular coat of the stomach, which he compares to the parietes of the ventricles of the heart, the fasciculi were prominent; in both cases there was scirrhus of the pylorus, and M. Louis proposed the question, whether the contraction of the duodenal orifice of the stomach was the cause of the hypertrophy. In the following case there was neither scirrhus nor contraction of the pylorus, and the opinion of M. Louis that these two diseases are independent on account of the frequency of the one and the rarity of the other, is confirmed.

A woman, forty-nine years of age, thin, sanguineous temperament, mother of several children, had experienced many domestic troubles, from which she endeavoured to distract her mind, by indulging her appetite for eating, which became incredibly voracious. In the summer of 1827, she complained of pe-

riodical dyspnœa, and swelling of the right foot; her menses ceased; she became emaciated; her appearance was that of a person in bad health. Nevertheless, she had no tumefaction of the abdomen, nor pain there on pressure; her appetite was good; evacuations regular; tongue clean, and she never complained of nausea, borborygmy, hiccup, or laborious digestion. The respiration was easy, pulsation of the heart feeble, the pulse normal. She was remarkably depressed in spirits. The predominant symptom consisted in a periodical dyspnœa, which recurred every evening, sometimes even during the night, and produced a sensation of weight in the lower part of the abdomen, which rose up like a ball towards the heart, and impeded her breathing. These symptoms continued for six or eight minutes, and always a long time subsequent to a meal. Their intensity became so great, that the patient was at times delirious; she even at one time attempted to hang herself. At the commencement of winter the emaciation made alarming progress, without the appetite being diminished, or the digestion deranged, and although the patient was so enfeebled, that she could not quit her bed. The violence of the paroxysms constantly increased; the marasmus took place, with subsultus tendinum, weakness of the organs of sense, coma, loss of sensibility, delirium, and finally, death on the 19th of December, 1827.

Autopsy, ten hours after death.—The pectoral organs were healthy; the heart small; the pericardium contained a little serosity; omentum wanting; liver and spleen normal; stomach shrivelled and thickened, especially towards the pyloric region, and along the larger curvature, which appeared less extended than the smaller; its blood-vessels empty; its mucous membrane thin, almost translucent, ordinary consistence, covered with a viscid and thick mucus, elevated by numerous muscular fasciculi, the size of a goose-quill, the direction of which was from the great cul-de-sac to the pylorus. These gave to the internal face of the stomach the appearance of that of the heart. Beneath these fasciculi the muscular coat formed a layer of half an inch in thickness. The remainder of the intestinal canal was in a normal state, as were also the urinary passages. This case is interesting in a double point of view; 1, in a pathological aspect, connecting the stomach with other muscular sacs; 2, by the almost total absence of symptoms referrible to the digestive organs.—*Rev. Méd. Aug. 1833.*

10. *Observations on Epidemic Gastric Fever, as it appeared in Limerick Garrison during the months of May, June, and July, 1833.* By RICHARD POOLE, Esq. Assistant-Surgeon 32d Regiment.—Affections of the alimentary canal were the prevailing disorders in the 32d Reserve, during the period of its being quartered in Limerick; but it was not until the subsidence of the influenza, that any examples of gastric fever made their appearance. Before this, one or two sporadic cases of an inflammatory type had occurred; but in these no decided evidence of gastro-enteric character existed. Besides, as the treatment, apparently the best adapted for these, would have had less beneficial effects in the complication mentioned, it is but fair to infer, that the alimentary canal was not the seat of any lesion that could have influenced their character; and it is singular, too, that, even during the time cholera existed in the garrison, some fevers, without any gastric complication, made their appearance.

Be it remarked, then, it was not until the influenza had existed for some time, and was on the decline, that a change in the type of the fever was observable; and that it is from this period I date the commencement of the epidemic which it will be my task in the following pages to describe.

It is not necessary for me to mention here the frequent instances on record of gastro-enteric fever, and diseases following the march of this singular affection. They are well known to most of the older practitioners who have paid any attention to epidemic constitution, and are amply detailed in the article Influenza published in the Cyclopædia of Medicine, to which I refer. It is equally unnecessary for me to give the *rationale* of their connexion. This must strike any one who considers the similarity of the textures concerned, especially

as, of late, attention has been much paid to the sympathies existing between the two membranes, and to the facility with which disease in the one is extended to the other. The article on Epidemic Gastric Fever by Dr. Cheyne, in the work alluded to, is a valuable summary of most of the facts connected with the disease; and nothing would induce me to go over nearly the same ground, but the wish to adduce further testimony to the truths it contains,—and some anxiety to impress upon the attention of my professional brethren in this country, the necessity of admitting the existence of a class of diseases which requires a plan of treatment very different from any promulgated by the authorities on whom they have been long in the habit of placing exclusive reliance.

That the disease in question depends upon a lesion of the gastro-enteric mucous surface, I conceive to be as probable as the connexion between *pneumonia* and its symptomatic fever; and, although I cannot bring forward necroscopic appearances to elucidate the position,—none of the cases having proved fatal,—I consider the relative proofs so strong, that I do not hesitate in giving to the disease the name here fixed,—believing that, under this, it is deserving of a place in any system of nosology founded on a pathological basis. Its similarity to the disease described by Dr. Cheyne, who gives several dissections, is further evidence of the correctness of this view.

Most of the cases which came under my observation presented, before the disease was unequivocally developed, considerable general disturbance, but by no means of a nature to excite apprehension of its invariable results,—being confined in a great measure to lassitude and prostration,—the patients complaining of general uneasiness, without being able to point out one sensation more uncomfortable than another. They were heavy, dull, and listless,—hanging over the fire,—feeling chilliness at one time, and irregular distribution of heat afterwards, with loathing of food, and frequent inclination for cold drinks, from the dry and parched state of the mouth. This was generally greatest in the morning. The complexion was usually dusky, all trace of sanguification being gone from the cheeks, and often from the lips. These disagreeable symptoms lasted for several days, and were soon followed by the development of fever, which was most complete towards night. The pulse averaged at 110; was sometimes tense, but generally soft and full. The skin became remarkably dry and harsh; moisture was never observed on it; and, in some cases, it assumed a degree of roughness similar to what is observed in chronic affections of the gastro-enteric organs. The patients became more and more depressed, and were overpowered by an apathy to external objects or ordinary impressions; and, though even now they scarcely complained, except, perhaps, of weakness, the whole expression showed amply the extent to which the disease had overcome their energies. As the fever may be now reckoned at its height, it will be better, for the purpose of elucidating its nature, to take a view *seriatim* of the symptoms, as referable to their respective localities.

I think it will be proved, in the course of this memoir, that the symptoms which might be termed cerebral were merely functional or sympathetic; but, to make the history as complete as possible, I shall mention, in the first place, all of them that may be attributed to an irritation of the *sensorium*. The most remarkable of these was profound torpor. The patient lay without exhibiting any evidence of intellect remaining,—the eyes were closed, and only sluggishly opened when he was addressed,—a few incoherent words were uttered at first, and as it were at random,—but presently he became roused, and answered questions as distinctly as the dry state of the mouth would permit. There was now complete return of consciousness, and the patient described with correctness his situation and feelings. In one case only, a man of the 83d Regiment, was there total insensibility, with picking the bed-clothes. Some complained of confusion in the head, giddiness when it was raised from the pillow, with noise and buzzing in the ears. Deafness was also observed. In one, twitching of the lips and slight contortion of the mouth were detected; but these, I think,

were almost entirely occasioned by the intense dryness of the fauces. Pain in the head was seldom complained of, and certainly was not felt at all by many, while giddiness and beating were often mentioned. The eyes were never injected, but dull and heavy; the cheeks seldom flushed,—the complexion being generally of an earthy-yellow cast.

All these symptoms, I am induced to believe, were entirely due to sympathetic excitement, and in no case appeared to depend on structural lesion. They become worthy of some special consideration, with a view to tracing their dependence on derangement existing in another situation. To this, however, I shall refer in its proper place.

The chest, examined by the stethoscope, afforded in every case, during the pyretic stage, numerous sibilant and sonorous rattles; but I generally found these disappear, without being followed by others, or any symptoms of bronchial disease. In some cases, however, they were attended by cough and expectoration, but never with pain; and in several I found benefit result from treating this affection locally,—a fact which I might readily have overlooked, but for the stethoscopic observation.

From these circumstances, and many others which I need not detail here, I think the stethoscopic signs deserving of attention, in showing the intensity of the disease when taken along with the symptoms; but I safely can state, that I usually considered the former of little importance, when not accompanied by other evidence of disease, and that I never had cause to regret having done so. Laennec probably carried his views on this point too far, and I hold the profession indebted to Dr. Graves for having sometime ago drawn their attention to the subject, and shown the errors into which we may fall by placing too much reliance on the signs furnished by auscultation during the progress of certain fevers.

But to proceed. The pectoral symptoms, when they did appear, were never serious. Some cough, with varied expectoration, might occur in the morning; but there never was any thing like profuse secretion from the bronchial membrane, and in none of the cases did the *parenchyma* or its investments suffer.

A *gastro-enteritis* being, so far as I can determine, the immediate cause of the phenomena observable in this disease, the symptoms ascribable to the disordered *viscera* demand the greatest attention. Yet with all this, an observer might overlook the seat of the whole mischief, and be led to consider a disease essentially specific, and requiring a distinct plan of treatment, as either of no importance, or similar to others which he is daily in the habit of meeting. A most mischievous and absurd blunder about pain at *epigastrium*, red tongue, &c. as characterizing gastric complication in different diseases, has been of late freely promulgated; and one is almost tempted to understand, that inflammatory affections of the muco-enteric surface have been specially favoured in being made so palpable to our powers of discrimination. But, however *decided* ignorance may be in its dogmas, any one who has paid attention to the diseases in question cannot but state, that their symptoms are far from being so glaring, and, from out of the innumerable variety exhibited, will fail in pointing out any one or two as pathognomonic. In none of the numerous disorders produced by this lesion are the symptoms so varied and obscure as in the one before us; and it is only from their assemblage, and not from any one in particular, that a diagnosis can be made. For example, in not one of the cases did there exist tenderness at the *epigastrium*, or any other part of the abdomen. Pain and weight, indeed, were often felt, but they were by no means constant, and depended most frequently either on distention from wind, or the soreness that attends a loose state of bowels.

Diarrhœa invariably ushered in the complaint, and frequently reappeared during its course; but the bowels were at other times slow, and required to be unloaded. Every medicine in this way, however, required to be of the mildest nature, as even the gentlest laxative produced often violent effects. The fecal discharges were varied;—in some they appeared wholly serous or mucous; in

others natural, but liquid. Various intermixtures of colouring matter were frequent;—in some blood; in others bile; and, in a case in the 83d Regiment, what might be termed mælena. In this case, large quantities of calomel and Cayenne pepper had been given by a practitioner in the country, who, fortunately for the patient, considered his case bad enough to have him removed to head-quarters. Griping was a frequent attendant, but *tenesmus* was not observed. Vomiting of *bilious*-looking matter occurred in one case; but the stomach was generally retentive, though nausea was by no means unfrequent. Complete *anorexia* existed for many days. The patient obstinately refused to eat any thing,—appearing to loathe the sight of food, or the idea of using it.

Thirst was incessant, cold drinks being greedily asked for, and relished; whereas any thing warm was as much an object of aversion as food. The mouth for many days was dried up, and parched to a remarkable degree; the fauces, gums, and tongue were red and glazed, as if covered with gold-beater's skin; the latter, during the course of the fever, became hard, dry and chopped, enveloped with a firm dark brown or black fur, and bleeding from its numerous fissures, when protruded from the mouth, which was done often, only with difficulty. This state of the tongue was very constant, and lasted until the fever was on the decline. The dryness of the fauces, as I mentioned before, was the cause of the deficient power of enunciating which existed in all the cases. I was led at first, however, to look upon it in another and more serious light.

To the state of the stomach and bowels must also be referred the constant prostration and feeling of languor and helplessness which characterized the attack; and I cannot but believe, that the torpor observed in many was but a high degree of this feature. The value of determining the point can only be appreciated by taking into consideration the readiness with which it may be confounded with *coma*, and attributed to structural derangement of the brain, or its membranes. In two of the cases in which it was most evident, a man of my own corps, and one of the 83d Regiment, in which it was attended with involuntary discharge of fæces, total insensibility, picking the bed-clothes, and other ataxic symptoms, it was entirely removed by copious leeching of the abdomen, and cold drinks,—with small doses of *Acet. Morph.* in the latter case; in which, had it been occasioned by sensorial lesion, it would surely have been increased by the opiate. In the former case, the assumed debility and prostration were so intense, that the patient could scarcely turn in bed. Yet, after the second or third leeching, he recovered so much, that, on awaking from sleep, and probably dreaming of other days, he got out of bed, put on his clothes, walked down stairs, and was found at the door of the hospital by the hospital-sergeant, whom he told he was going by my leave to visit his mother in an adjoining county.

These facts, with others which I need not detail here, serve to show that prostration and torpor are but shades of the same disorder; and that, whenever they exist, we are warranted in believing the gastro-enteric surface the seat of more or less inflammatory action. They are, however, by no means new, having been brought before the profession some time ago by M. Broussais, since confirmed by the researches of Andral, and, if less known in this country than they deserve, which I think scarcely admits of a question, it is the fault of a few to whom for a long time a blind deference has been paid by the mass of practitioners. This, however, is not the place for a discussion of the subject.

The duration of the stage, characterized by the preceding symptoms, varied, of course, in different cases, but on an average, may be stated to have lasted from a week to ten days. In all of them was observed great tendency to muttering during sleep; and several of the patients got up while asleep, and attempted to leave their wards. The pulse varied but little, either in frequency or force,—being often for days 130, but seldom under 100. In this fever, no critical discharges were ever observed; the symptoms gradually declined in se-

verity; the skin became softer and cooler during the day, but evening accessions were observed for some time afterwards; the tongue got daily more moist,—the dry patches disappearing, and being replaced by a creamy deposit, which I always looked upon as the harbinger of recovery. In some cases, this became dry and scaly, from some fresh irritation; but in some of them it slowly went off, leaving the tongue remarkably white, and as it were firmer and closer, from being decreased in volume. The thirst abating, some appetite was felt; but it was never craving or voracious, and was readily satisfied by light farinaceous diet, which the patient invariably relished more than any other that was offered. The cough generally went off about the same time; the bowels became easy and regular, and seldom required during recovery, assistance from medicine. Convalescence was tedious and protracted, but in no case was there any relapse.

The duration of the attack averaged from five weeks to two months. As I stated before, no death occurred in any of the cases that came under my observation, which included a squadron of dragoons, the 32d Reserve, and 83d Regiment; but I was given to understand that the son of an officer belonging to another corps sank under a protracted attack. Some cases of fever of a like character prevailed in town; but I cannot state any thing concerning their progress or termination.

Treatment.—General bleeding was adopted in several cases at the commencement, with a view to cut short the disease by making an impression on the system, and to pave the way for local depletion; but I cannot state that in any it appeared to fulfil the intention. In no case, however, did it seem to do harm, as the quantity abstracted was never great. My conviction is, it might have been safely dispensed with in all, as the *phlegmasiæ* of mucous membranes, and especially of the enteric, appear to be little under the influence of the general circulation, and few of them ever excite any violent action of the heart, which demands the use of this remedy. But for all this, cases often occur in which the general excitation is great, and in these, general depletion is undoubtedly required, as the attempt to unload the capillaries must be always futile when the centre of circulation continues over-active. I might digress here to some length, as the subject is an interesting one; but the object of this memoir being merely to describe facts and occurrences, any thing like discussion is contra-indicated.

Suffice it to say then, that none of the cases exhibited any great vascular excitement, and that the general bleeding was perhaps used more from speculation than cogent reason. Local depletion was in all of my own cases freely used when the disease was pronounced, and different parts of the abdomen were at times selected for this purpose. When much diarrhœa existed, the position of the lower end of the *ileum* and course of the colon was chosen,—the region of the *duodenum* in one, in which there was much yellowness of the skin and *conjunctivæ*; and in most of them, at one time or another, the *epigastrium*, without being demanded by any of what have been looked upon as specific gastric symptoms. Leeches were always used, as cupping is generally more irksome to the patient, and frequently a less efficacious means of procuring blood. From this remedy the best effects were produced,—in most of the cases a marked improvement following each application. The extent to which it was carried was regulated of course by the demand. In some cases, as of men belonging to other corps, in whom the treatment had been conducted from the beginning on different principles, and who presented the worst symptoms observed in the disease, copious leeching was invariably followed by an almost immediate change for the better, and it was from this period alone that the recovery might be dated. I can therefore safely state, that, on this remedy, I chiefly depended as a means of reducing the local affection, after which the progress of recovery was uninterrupted.

Different counter-irritants were likewise applied to the abdomen, as emetic

tartar ointment, any of the ethers, turpentine, &c. the former frequently with good effects in restraining diarrhœa, and the others in relieving the sensations of uneasiness complained of.

Counter-irritation on the chest was freely used during the existence of the pectoral symptoms. Tepid and even cold sponging was plentifully used, and always produced grateful and salutary effects. The loose state of the bowels at the commencement precluded every thing in the form of purgative; but during the course of the disease, attention was paid to procuring daily evacuations by laxatives or *enemata*. This affection, as Dr. Cheyne truly observes, is not a fever that requires any thing like a purgative plan of treatment,—all that is demanded being merely the emptying the contents of the canal, which is to be done only by the mildest remedies.

As adjuncts to local bleeding, in allaying the irritation of the membrane, and quieting the different uneasy sensations that occurred, I found many of the sedative medicines beneficial, and when used with caution and due regard to the condition of the patient, I can safely say, that even under circumstances which might be accounted as contraindicating their employment, they always appeared to me to be followed by excellent effects. The medicines of this class chiefly used were hyoscyamus, or the acetate of morphia. The former, in almost every stage of the disease, produced quietness and relief to the local pain; it in some instances gently moved the bowels, and frequently in full doses produced a quiet night's rest, without being followed by disagreeable sensations next morning. Combined with any of the gum solutions; but especially the tragacanth, it formed an excellent lenitus for allaying the cough, and even in this form, appeared often to relieve the irritation attending the diarrhœa. The morphia was used in several severe cases in the 83d Regiment, even under the worst of the *cerebral* symptoms, with good effects, and in no instance appeared to increase them. I used it in several cases in the 32d Regiment, and found that it frequently procured good nights without any bad effects; but in others, observing the tongue in the morning more parched, I was naturally led to substitute for it the hyoscyamus, which never occasioned any change in the secretions. In advanced cases, it answered better, particularly if there was troublesome diarrhœa.

During the whole course of the fever, the patients drank freely of cold acidulated mucilages, which relieved their thirst in a way most grateful to their feelings. During the first week or fortnight, abstinence was both enjoined and voluntary; but, on the return of the appetite, mild farinaceous diet was allowed, and the patients by degrees, as the fever declined, returned to the use of more nourishing food. In some, a little wine or malt liquor was allowed during convalescence; but they were not generally required.

I may conclude by saying, that the treatment adopted, with the exception of the depletory measures, was essentially expectant;—in fact, there were but few symptoms to combat, and I took care, as far as possible, to develope no new ones,—a care, in which, as there never appeared any of those alarming and sudden phenomena so peculiarly observed under different circumstances, I have some cause to believe I succeeded.—*Edin. Med. and Surg. Journ.* January, 1834.

11. *Paraplegia Dependent on Chronic Inflammation of the Spinal Cord.*—Dr. CRAIGIE has recorded the following interesting case of this affection in our esteemed cotemporary, the *Edinburgh Medical and Surgical Journal*, for January last. This case occurred in an unmarried female, thirty-five years of age, who had been in hospital about twelve months previously, with symptoms of *hemiplegia*, which had partially disappeared after treatment of some weeks' duration, but left a degree of inability to walk, in consequence of an involuntary spasmodic contraction of the flexor muscles of the thigh. Some months after she complained of a sense of weakness, and constriction referred to the lumbar region; and about a month before admission, (*i. e.* about the 25th February,

1833,) she began to complain of inability to move the left lower extremity without dragging it, and a sense of numbness from the lumbar region downwards, and also in the left iliac region. At the period of admission on the 25th March, she complained much of the involuntary spasmodic traction of the flexor muscles, which, with a sense of painful distention round the belly, was so considerable, as to disturb her nights and prevent sleep. The appetite was stated to be good, the general health not affected. The pulse, however, was from 80 to 90, the skin hot and dry, and the tongue covered with a brown dry fur. The intellectual functions were unimpaired, and the urine and feces passed naturally. The whole vertebral column bore pressure and warmth without uneasiness; and there was no deformity or change in direction.

As I was convinced, from the symptoms now enumerated, that the spinal chord or envelopes were the seat of a chronic inflammatory process, I ordered blood to be drawn from along the course of the dorsal and dorso-lumbar region of the spine by leeches and cupping, the bowels to be emptied by the compound colocynth pill and calomel, and occasionally by croton oil, aloes, and calomel.

An attack of shivering, with sickness and vomiting, succeeded by heat, quick pulse, general pains, and an aggravation of the spasmodic attacks, made me dread the accession of an acute form of the complaint, and induced me to order a general blood-letting to the amount of eighteen ounces, to be followed by a dose of infusion of senna and the saline mixture; and, as the blood was much buffed and cupped, and she bore the evacuation well, twelve ounces more were drawn in the evening; the bowels were freely opened by cathartic medicine, and blood was drawn from the ileo-lumbar region, to which much pain was referred, by means of leeches. Under the use of these agents she was less distressed with the spasmodic contractions, and she thought that she had more command of the lower extremities. Rose, which, however, all this season was prevalent in the hospital, appeared on the back and belly, and added much to her sufferings. On the 6th, she complained much of tension and constriction of the belly, the stools were passed unconsciously, and the bladder had lost its contractile power, requiring the urine, amounting occasionally to six pounds, to be withdrawn by the catheter.

These symptoms continued to the 10th, when they were aggravated by the addition of sickness and vomiting. The muscles of the lower extremity, as well as the *rectum* and bladder, did not recover any power; and, after a state of listlessness and extreme feebleness, with respiration only at eleven in the minute, yet without hiccup or insensibility, death took place on the 14th.

On laying open the spinal *theca*, there was found effused beneath it a considerable quantity of fluid highly tinged with blood, probably chiefly from divided vessels. Along the whole course of the dorsal *vertebra* the *theca* was injected and thickened, especially anteriorly. On dividing the *pia mater*, part of the spinal cord, opposite the tenth, eleventh, and twelfth dorsal *vertebræ* protruded like a *hernia cerebri*, and it was found to be extremely soft, pulpy, and of a homogeneous cream colour. This condition of the cord extended upwards to the second dorsal *vertebra*, and downwards to the second lumbar *vertebra*, diminishing in both directions gradually till it terminated in sound cerebral matter. It was most remarkable in the posterior surface, where all trace of organization was destroyed, but less so at the anterior surface, excepting at the spot opposite to the tenth and eleventh dorsal *vertebræ*, where, when removed from the sheath, it was so unable to sustain its own weight that it fell asunder.

On examining the brain, a considerable quantity of fluid was found effused under the arachnoid membrane, rendering it opaque. The substance of the brain was healthy. The ventricles were slightly distended by serous fluid; and the choroid *plexus* and the *pia mater*, at its junction with that web, were remarkably vascular.

In the chest the right lung was generally adherent. Both were emphyse-

matous in some degree anteriorly and inferiorly, and the superior lobes were highly œdematous, emitting frothy serous fluid in considerable quantity on each incision. The heart was natural in size and structure.

The liver was rather paler and firmer than natural. The other organs were sound. In this case the pulpy destruction of the spinal cord, which gave rise to the paraplegic symptoms, arose spontaneously, so far as could be discovered, or, at least, was unconnected with any disease of the *vertebræ*. The *theca* alone appeared to be in a state of previous chronic inflammation; but this could not have been adequate alone to induce the disease of the spinal cord. The arteries also were sound.

12. *Case of Myelitic Paraplegia depending upon Disease of the Bodies of the Vertebrae*.—This case is also recorded by Dr. CRAIGIE in the same journal. The subject of it was a widow, Isabella Meldrum, aged fifty-three, following the occupation of a washerwoman. About five or six months before, she had fallen down a flight of stairs, and lighted on her back. This accident attracted little attention at the time. But about the close of January, 1833, she was affected by tingling sensations, with numbness in the limbs, while her general health was enfeebled by dyspeptic symptoms. The tingling sensations continuing, she was attacked, in the course of two weeks more, by severe pains in the epigastric and right lumbar region, with great general feebleness and partial loss of motion and sensation of the lower extremities, beginning first in the feet and toes, and extending upwards. When these symptoms had continued about two weeks, the feet became œdematous and cold; and constipation was followed by involuntary discharge of the feces, while the bladder becoming over-distended, lost its retentive powers. The constant trickling of urine in this manner had produced large sloughs over the *sacrum*, while the application of excessive warmth to the insensible skin of the feet had been followed by several bad sores. In this state she was admitted on the 24th March, with the *abdomen* much distended and tympanitic, sensation almost gone below the epigastric region, the feet and legs œdematous, the temperature rather above natural, the hypogastric region painful, and the urine incessantly trickling from the bladder.

By the frequent use of the catheter, the bladder recovered much of its power, and she was made comparatively comfortable. The bowels were opened by calomel and colocynth, with the aid of occasional enemata; blood was drawn from the region of the spine by means of leeches; powders consisting of super-tartrate and nitrate of potass, and carbonate of soda, with aromatic powder, were given to act on the kidneys; a light but nutritious form of diet was directed; and to the sloughs on the back and sores on the feet poultices and the warm dressing, or the resinous ointment, were applied.

Under these measures, I. Meldrum became greatly more comfortable, and recovered some sense and motion of the limbs; the urine became copious; the œdematous swelling of the feet subsided; and the tympanitic sensation of the *abdomen* abated. It was very soon observed, however, by the constant weight and pain in the hypogastric region, with the turbid, clouded, fetid urine, that she was labouring under catarrhal inflammation of the bladder. The thirst continued unquenchable, the tongue dry and brown, the pulse never below 112, and the skin hot and dry; and after languishing for two weeks more, notwithstanding the use of appropriate remedies, with such articles of nourishment and wine as she could take, she died on the 25th April.

The following appearances were observed.

At least one ounce of serous fluid was found within the *theca* of the spinal cord. When this was laid completely open, the cord was found pale, and of a dead white colour, and as soft as thick cream, first at a part corresponding to the eleventh and twelfth dorsal *vertebræ*, where it broke down completely, and was void of organization. Upwards from this the cord was softened as far as the seventh cervical, and downwards as far as the second lumbar *vertebra*; and through the whole of this extent it was of the consistence of thick cream of a

dead white colour, and without marks of fibrous structure. The eleventh and twelfth dorsal *vertebræ* were on their posterior surface denuded of *periosteum*, and presented a quantity of granular matter, on removing which the *cancelli* were exposed and somewhat softened and carious. The intervertebral cartilage, between the first and second lumbar *vertebræ*, presented a globular excrescence about half an inch in diameter, and one-fourth in elevation. There was another smaller one between the second and third lumbar *vertebræ*. On opening the *thorax*, five of the dorsal *vertebræ* were found covered on the right side by an oblong cyst containing pulpy matter of an atheromatous appearance and consistence. On removing this cyst, the bodies of the *vertebræ* were found deprived of *periosteum*, and their cancellated texture exposed.

The convolutions of the brain were much softened, and a considerable quantity of serous effusion was found in the sub-arachnoid tissue. The substance of the brain was softened, and the ventricles contained some serous fluid.

The upper extremity of the left kidney was closely adherent to the diaphragm and spleen; at the inferior part was an abscess containing tubercular granular matter, which was found on dissection to communicate with the *pelvis*. Several of the *calyces* were enlarged, and contained similar matter. The *ureter* was dilated and thickened, and its mucous membrane inflamed and roughened on the surface.

In the right kidney the *pelvis* was also dilated, and its mucous membrane thick and roughened. The *ureter* was also enlarged and thickened.

The coats of the bladder were much thickened, its mucous membrane of a bluish colour, irregular, and covered with bloody patches. The dimensions of the bladder were much contracted.

This and the preceding case illustrate remarkably a general fact observed in the approach of palsy, especially when it depends on a progressively advancing disease of the central parts of the nervous system. In both, the accession of the symptoms was marked by painful involuntary spasmodic contractions of the flexor muscles. This indicated, not that the nerves of the flexor muscles were most affected, but that those of the extensors were already diseased so far as to have lost all controul over the muscles. In consequence of this, with the disturbed action at the central ends of the nerves generally, the inherent irritability of the flexor muscles gives rise to spasmodic contractions. This phenomenon is not observed when the injury or disease is so great as to extinguish suddenly all sensation and motion, but only when it advances so slowly and progressively as to pass through successive stages to the final result.

13. *Case of Periostitis with Ozaena.* By DAVID CRAIGIE, M. D.—This case occurred in the person of a woman named Robina Wright, aged twenty-nine, who had been long known as one who, though not exactly a public female, had been subjected to repeated courses of mercury. At a former period, syphilis had produced destruction of the *recto-vaginal septum*; and she subsequently suffered much from the contraction consequent on cicatrization. At present, (19th February,) she applied for admission for symptoms of rheumatism; but the pains mistaken for this disease were evidently the *dolores osteocopi*, or the deep-seated aching pain resulting from inflammation of the *periosteum* of the *tibia* and of both *parietal* bones.

The usual remedies of local depletion and counter-irritation were applied. Opiates were exhibited, and the warm bath was administered; and, had it not been for the epidemic prevalence of *erysipelas* at this time, with the dilapidated state of the patient's constitution, this woman's sufferings might have been alleviated, and the disease retarded in progress.

An obstinate fetid puriform discharge, however, from the nostrils, with some tenderness in the situation of the nose, indicated the existence of inflammation of the *periosteum* of the bones of the face; and the occurrence of *erysipelas*, by aggravating her febrile symptoms, disturbing her sleep, and affecting the brain, very soon brought her to a state in which medical treatment was of little or no

avail. After a combination of low delirium with stupor for four or five days, succeeding on the intense swelling of the face, with symptoms of extreme difficulty of respiration, tracheo-bronchial rattling, and incapacity to swallow, she died on the 9th of March, suffocated apparently by the constant accumulation of mucus from the back part of the nostrils upon the *glottis* and *larynx*.

Upon inspecting the body, a great quantity of viscid purulent mucus was found covering the posterior nasal cavities, the posterior *fauces*, the *glottis*, *epiglottis*, and *pharynx*. The *periosteum* of the nasal bones, of the upper part of the superior maxillary bones, where they form the floor of the orbit, and that of the superior and inferior spongy bones was completely detached, and came away as if it had been subjected to long maceration or boiling. The *periosteum* of all these bones was very much thickened and extremely vascular; and between it and its respective bones, purulent or sero-purulent fluid was interposed. The bones themselves, instead of presenting the usual bluish colour, were more or less white; and the upper part of the orbital plate of the left maxillary bone, as well as the inside of both nasal bones, was of a dead white.

The membrane lining the *antra* of both maxillary bones was in like manner very much thickened, and covered with a viscid purulent secretion; and when this was removed, it was found to be granular, villous, and much injected. This membrane also adhered very loosely; and when an incision was made into it, it was found to be detached from the body plate of the *antrum*.

These appearances showed clearly that the inflammation of the *periosteum* had destroyed the connexion between the vessels of that membrane and the surface of the bones, and had thereby first interrupted the nutrition of these bones, and then produced their death, or *necrosis*. There is no doubt, that, eventually having now become foreign bodies, they must have been discharged in this manner from their situation; and there is also equally little doubt that, until this result was consummated, they must have maintained an inflammatory action and suppuration, or a series of actions, interrupted only or alleviated in their severity by the occasional escape of portions of bone of various sizes.

Permission to inspect the head was, from particular circumstances, not obtained. I had an opportunity, however, of inspecting the outer surface of each parietal bone near the tuberosities, to which chiefly the gnawing pains of the head were referred; and there, also, I found the connexion between the *pericranium* and parietal bones completely destroyed on the right side, and very much loosened on the left. The *pericranium* itself was thickened, and contained some serous infiltration. But the parietal bones presented no new deposition or irregularity of their surface. It was, however, though not so white as the bones of the nose and face, less blue than natural, and not completely dead. The anterior surfaces of both *tibiae* were extremely rough and irregular, with deep longitudinal lines, presenting the worm-eaten appearance described by the older authors. These longitudinal depressions appeared to be formed in the substance of a new osseous deposit. The *periosteum* of these bones was thickened and indurated; but at the period at which I inspected it, it was impossible to say whether it had been preternaturally vascular or not.

This case I regard as particularly valuable for several reasons. It shows, in the *first* place, the true cause of *ozæna*, and the manner in which syphilitic or mercurial caries of the bones of the nose commences. That disease does not originate in the bones, but always begins in the fibro-mucous tissue which covers these bones, and by the vessels of which they are in a great measure nourished. I do not pretend to say whether this morbid action originates from the poison of *syphilis*, or the noxious operation of mercurial medicines; but one thing I know to be certain, from a considerable number of cases that have fallen under my observation, that the frequency of this disease of the *periosteum* is in the direct ratio of the quantity of mercury that has been taken, and the number of times that mercurial courses have been exhibited. The subject of the present case had been repeatedly under the influence of mercurial medicines; and though, like others, she had always derived from them immediate improvement,

this was destined to be followed by an invariable aggravation of the periosteal disease.

Omitting, however, these considerations with regard to the cause, this case demonstrates unequivocally the nature of the action. It shows that the first step of the process is inflammation of the fibro-mucous membrane covering the facial bones; and that this inflammation commences most readily in those in which these two membranes are in immediate contact,—for instance, the inner surface of the nasal bones; the superior and inferior spongy bones; and the naso-palatine plate of the superior maxillary bone. The next step is the effect of this inflammation. The overloaded vessels are unable to transmit blood as formerly, into the substance of the bone; they become detached, while they give rise to a new morbid secretion; the bone, in the meantime deprived of its ordinary nutriment, either becomes carious, or is killed outright, and is necessarily, after exciting much irritation, expelled as a foreign body.

This representation I have derived, not from the case of this woman alone, but from several similar ones in which I have had occasion to observe the same train of phenomena.

In the *second* place, it is worthy of observation, that periosteal inflammation produces two different effects,—one a detachment of *periosteum*, with death of the bone; the other a deposition of new bone, rendering the surface rough and irregular. The former action appears to be much more violent than the latter; and while the case of this patient presented both varieties of the action, the former in the parietal and facial bones, and the latter in both *tibiæ*, it was the former chiefly that produced with the *erysipelas* the fatal termination of the disease.—*Ed. Med. and Surg. Journ. January, 1834.*

14. *Meningeal Apoplexy*.—M. Alégre has communicated to the Anatomical Society of Paris an example of this in a female, seventy-one years of age, who died suddenly. A clot of the size of an almond was found beneath the cerebral protuberance, between the nervous substance and the pia mater, and communicating by traces of coagulated blood to numerous small surrounding coagulæ, also situated beneath the pia mater. The most minute researches in the cerebral substance could not detect any lesions from which this blood could have come. This form of apoplexy so frequent according to M. Cruveilhier in new-born children, is rare in adults.—*Rev. Méd. February and July, 1833.*

15. *Apoplexy of the Spinal Marrow*.—M. Monod has communicated an instance of this rare affection, to the Anatomical Society of Paris. In this case there was found near the origin of the inferior dorsal nerves, a sanguineous effusion in the central gray substance, to the extent of two inches and a half. This effusion had commenced on the right side, and extended to the left. The blood had diffused itself from its source along the central gray substance of the right side, as far as the second dorsal pair of nerves. The symptoms were remarkable; the first consisted in pain at the seat of the effusion; which pain extended corresponding to the effusion along the spinal column; it also extended to the loins, along the nerves which arise from the seat of the apoplexy. The second symptom was paralysis of motion in the corresponding limb; but a singular phenomenon, and which the cadaveric lesion did not explain, is the loss of sensibility of the left side. The symptoms came on gradually, and not suddenly as in cerebral apoplexies.—*Rev. Méd. February, 1833.*

16. *Case of Melæna with the Dissection*. By DAVID CRAIGIE, M. D. &c.—This case occurred in the person of George Craig, a man, thirty-five years of age, sanguine and plethoric in appearance. This man, who had been at one time a soldier, but now pursued the occupation of a tailor, had been for many years past addicted to incurable and uninterrupted habits of dram-drinking; and all the money which he was enabled to procure was spent in indulging this craving for liquor. For two weeks previous to his application at the hospital,

he had complained of a painful sense of weight and distention all over the *abdomen*, but referred more particularly to the umbilical region, and the upper margin of the hypogastric. This was accompanied with sensations of dullness, head-ache, impaired appetite, occasional squeamishness, much thirst, and general feebleness. The head-ache subsided on the 2d or 3d day; and the only symptom which continued obstinately was the faint squeamishness and the painful sense of tension and weight, which was at admission referred to the epigastric, umbilical, and upper part of the hypogastric regions, with the occasional sickness, but without vomiting, tenderness, or tension. The tongue was white and moist; the bowels were reported regular; the pulse was natural, from 70 to 80; and the skin of moderate warmth.

Two colocynth pills and three ounces of infusion of senna had the effect of moving the bowels freely but gently, cleansing the tongue, and abating the abdominal pain very much; and on the 14th he had no complaint except squeamishness. As the pulse and cutaneous heat were natural, all medicine was omitted; and he was left to the effect of the fever diet and time.

He continued easy and without complaint, except a little sickness, till about eight in the evening, when he began to feel a sense of weight in the belly, which continued till half-past ten. At this time an urgent call to stool was followed by a copious gush of pure blood from the *rectum*, which was repeated at different times in the course of one hour and a half, till it amounted to five or six pounds. At 12, an opiate enema was administered; and after this no more blood was discharged; but he continued in a very faint and languid state for about three hours, and expired at three on the morning of the 15th.

The blood discharged from the intestines when examined next day consisted of dark-coloured fluid blood mixed with large clotted masses.

On laying open the cavity of the *abdomen*, the peritoneal surface of the intestines was deeply stained of a dark pink-red colour, in some points lighter, in others more intense, but particularly so long the whole course of the *ileum*.

In the cavity of the stomach there were found two pounds of blood, chiefly dark-coloured, partly clotted and grumous, partly semifluid. When this was removed the mucous membrane was observed to be deeply tinged with red blood, and the membrane was itself thickened and injected, but not softened. The mucous membrane of the *œsophagus* was perfectly pale and blanched. On holding up the mucous membrane to the light, the large vessels were seen much loaded, and the substance of the membrane itself deeply tinged, and the small vessels distributed through it. Upon the most careful examination of the membrane, no blood was found issuing from any particular aperture.

The mucous coat of the *duodenum* was in like manner coloured deep red, and the glands were somewhat more distinct than natural. The whole mucous membrane of the *jejunum* and *ileum* was in like manner deeply tinged with red blood. Fully three pounds of blood, partly fluid, were found chiefly towards the lower part of the *ileum*; and when this was removed, and the mucous membrane carefully washed, it still presented a very deep coloration, its vessels much injected, and the *villi* much erected and covered with a thin pasty layer, which was also tinged red. On the most careful examination of the whole membrane, no aperture could be discovered, but merely a general oozing from the membrane. Previous to removing this substance, the superior mesenteric artery was exposed, and a quantity of water forcibly injected, but without detecting any open or ruptured aperture, the water escaping only from the surface of the membrane by numerous minute vessels. The intestinal glands, both solitary and agminated, were perfectly healthy. A small quantity of clotted blood was found in different parts of the colon, but its mucous membrane was healthy.

The liver was perfectly healthy.

The spleen was very much softened, and of a deep colour, like masses of coagulated blood.

Head.—The membranes and surface of the brain were more injected than

natural, and its substance presented numerous dark red streaks. The ventricles were also dilated, and contained a small quantity of serum. A good deal of serous fluid was found in the subarachnoid tissue at the base of the brain.

The lungs were perfectly sound.

The heart was free from disease, and its valves perfectly healthy. But the beginning of the *aorta*, between the semilunar valves and the arch, was much elevated and irregular, from steatomatous matter deposited in tubercular masses, and especially around the origin of the large vessels; and a large crimson-red patch was found on the arch under the *tunica intima*.

The right kidney was deeply injected, but healthy; the left presenting some disease of the granular matter.

These appearances show clearly that the intestinal hæmorrhage which had proved the cause of the death of this man did not proceed from any single vessel, or two or three vessels, which had been eroded, perforated, or ruptured, as might have been imagined, but that it issued from the vessels of the entire mucous surface of the *duodenum*, *ileum*, and perhaps also from those of the stomach, previously thrown into an injected and congested condition, and then undergoing disorganization at their extremities, as in *melæna*, yellow fever, and similar states of the gastro-enteric membrane. I afterwards learned from a respectable man, who was in the habit of employing Craig, that he was a habitual dram-drinker,—that all the money which he earned was spent in the purchase of spirits,—and that, after he had received a few shillings for his work, he was in the habit of spending it all by sixpences in drinking, so that he was often days without food, or taking any thing but the deleterious liquor to which he was so much attached; and that, previous to the illness which proved fatal, he had spent several days in this pernicious course.—*Edin. Med. and Surg. Journ.* Jan. 1834.

17. *On the Pendulous Tumour of the External Ear.* By Dr. A. CAMPBELL.—At the meeting on the 2d March, 1833, a letter from Dr. Campbell was read, containing an account of the pendulous tumour of the external ear, which is a very frequent disease among the natives of the valley of Nipal; and often observed to occur in the same individuals who are affected with goitre. Two tumours were sent by Dr. Campbell to the Society's Museum; they had grown from the helices of the ears of a woman, and drew down and doubled the ear over the external meatus auditorius, so as greatly to obstruct hearing. The surfaces of the tumours were uneven, and their feel fleshy, but firm; their internal structure is described as resembling that of mammary sarcoma. They were removed by simple incision with a scalpel, and weighed together twenty-four ounces. The wounds soon healed, and the ears resumed their natural position. The patient from whom these tumours were taken, is affected with a large bronchocele; her eldest daughter, aged nine years, has a tumour the size of a walnut, attached to each external ear, and another daughter, aged six years, has a goitre of three years growth, which is as large as an orange. In the same communication the author states, that bronchocele very often occurs in animals in Nipal, lambs and kids being often born with remarkable morbid development of the thyroid gland; some preparations of these diseases were also sent, as well as a steatomatous tumour, the size of a small orange, which was removed from the sheath of the penis of a dog; this animal was taken to Nipal from the plains of Bengal in March, 1832, and in July the disease was observed and removed.—*Trans. of Med. and Phys. Soc. of Calcutta*, Vol. VI., 1833.

18. *Swelled Leg resembling Phlegmasia Dolens, and Obliteration of the Iliac Vein.* By J. C. BOSWELL, Esq.—On the 8th February, 1832, an emaciated Chinese pauper was brought before the Police at Penang, and from the circumstance of his not speaking, he was supposed to be insane; however, on examination, it appeared that the man was unable to speak in consequence of the extremely low and miserable state to which he was reduced. Besides the great

general debility, there was an uniform swelling of the left lower extremity, extending from the toes to the groin. The limb was nearly three times the size of the other; it was cool, œdematous, and it pitted on pressure, but was rather elastic, and of much lighter colour than the opposite limb; the glands in the groin were not swollen. As only one limb was affected, the disease was not considered common œdema. The patient died on the third day after he was first brought under observation. On post mortem inspection, the cellular structure of the limb was found loaded with serum. The femoral vein was turgid with coagulated blood; the middle portion of the iliac vein appeared constricted, as if compressed by a ligature, and there were several enlarged and indurated absorbent glands near that part, from whence upwards the cavity of the vein was filled with laminæ of firm coagula, the extremity of which extended across the lower part of the vena cava, above an inch into the right iliac vein, but there was no sign of disease in the vessels of the right side. The mesenteric as well as the bronchial glands were much enlarged and indurated; and there were extensive marks of chronic disease in the lungs.—*Ibid.*

19. *Case of Engorgement of the Occipital and Vertebral Ligaments—Palsy and Atrophy of the left half of the Tongue.*—A man, aged 30, whose employment it is important to notice, as it materially influenced the development of his disorder, was received in this hospital in the course of last year. He was a lace-weaver, and was accordingly obliged to work in cellars and on cold and damp ground floors. Persons of this trade are very subject to rheumatic affections, and swellings of the ligaments of the joints. Three years ago, this man was seized with a very sharp pain of the left and back part of the head, which totally impeded him from moving the parts, and deprived him of sleep. In the course of five or six days they changed their position, and settled in the left side of the upper part of the neck. The pains were not now so violent, but motion of the head was still impossible. Lateral flexion of the head, it is true, was partly performed by the totality of the cervical column; and the head could, moreover, be slightly bent forward and backward by the same means. The seat of the malady was evidently in the vertebræ themselves, if it was not in the muscles—a supposition which, as we shall see, was inadmissible.

The next peculiarity observable in this case was, a difficulty of speaking; at first inconsiderable, but increasing gradually to such an extent, that, at the end of two months, the patient could not be understood. He said that the air passed by the left side of his tongue with a whistling sound, and when he wanted to say *je*, he could only utter *ze*. There were some pains at the angle of the jaw and in the cheek of the left side; but there was no paralysis of the muscle in that quarter.

Another symptom now became remarkable. The tongue began to diminish in bulk on the left side, and the diminution soon amounted to a perfect atrophy. The organ at this part appeared to be formed of nothing more than membranous folds, which could be rubbed together without feeling in any degree muscular: it felt like an empty leather purse. When the tongue was put out, its right side seemed sound enough; and the atrophy of the left, which was most visible at the end and middle portion, was inconsiderable at the base. The right side even seemed to enjoy a more than usual degree of strength and activity, as is observable in other parts of the body when the corresponding parts are paralyzed. There was a curvature to the right side when the tongue was thrust out. It was only in the first months that articulation was difficult or impossible: when examined at the hospital, he could speak as well as if there had been no atrophy. This must have been the result of practice; for it is known that speech can be effected by this means with half a tongue, nay with a less portion, a third, a fourth part, and even with a stump that is scarcely visible.

I was anxious to find what changes had occurred in the sense of taste; and with this view I made four watery solutions of sugar, sulphate of quinine, com-

mon salt, and an acid. I tried them first on the healthy subject: some of the pupils submitted to the experiment. Keeping the tongue motionless, a few drops of these solutions were applied to the tip—there was no taste perceived; they were applied then successively to the middle and to the base, when the different flavours were perfectly distinguished. Trying the same experiments on the patient, it was found that there was no sense of taste at the tip of the atrophied side; but in the middle portion, and according as the base was approached, the more acute and perfect was the sense. Thus it appeared, that though the muscles were gone, the sense of taste remained in all its perfection—a remark of very great importance.

By considering next, what nerves are distributed to these muscles, we were still further able to form an opinion of the seat of the disorder, and the cause of the atrophy. The nerves of the tongue are the lingual, the glosso-pharyngeal, and the hypoglossal; the lingual being distributed to the nervous papillæ of the surface; the glosso-pharyngeal to the back part and lateral portions of the pharynx: the first is subservient to the taste, the second to the motions of the organ. Now the sense of taste being unimpaired, the lingual nerve was safe; and if there had been an alteration in the glosso-pharyngeal nerve, the functions of the pharynx would have been impaired, and the base of the tongue would have suffered more or less from the atrophy. The nerve of the ninth pair, the great hypoglossal, then remains; and it is worth while considering the origin and distribution of this important agent. It arises from filaments in the furrow situated between the corpora olivaria and pyramidalia, on the sides of the medulla oblongata, and issues from the skull by the anterior condyloid foramen, at the internal and posterior side of the foramen lacerum. The eighth pair, in like manner, passes through at the same place; but it does not appear to have been involved in this malady, for the functions of the stomach and alimentary canal remained unimpaired. The nerve of the ninth pair receives and gives off numerous branches: some of these are distributed to the muscles inserted in the hyoid bone; others supply the middle cervical plexus; and accordingly, in the present case, the left side of the neck seems to have been not so well supplied as the right. This nerve, in fine, which is the true mover of the tongue, is terminated every where in muscular parts. So much then being premised relative to the different functions of the nerves of the tongue, we shall now consider briefly whether the atrophy depended on the brain or the nerve.

The acute pains felt by the patient at the commencement of his disorder were simply external or superficial: there was no disturbance of the intellectual functions all along; nor of the locomotive functions: there has been no palsy in parts supplied by cerebral nerves. Nor does the medulla oblongata appear to be the origin of the affection, for there have been no troublesome symptoms in parts supplied from that quarter. Nor, finally, for the same reason, can the spinal marrow be supposed the source of the malady.

Taken in every point of view, the disorder in this case appears to me to result from a lesion of the nerve of the ninth pair, not within the skull, but after its departure from that cavity. This opinion seems borne out by the lesion of the occipito-vertebral articulation. The inability to execute movements of the head seems to point out some affection existing between the vertebræ, the cause of which is probably rheumatism, and the seat the ligaments. The disorder began on the left side: it descended to the neck on the same side; the *point de depart* is then between the occipital and the first vertebra, and perhaps even extending to between the first and second.

Diseases of this kind are by no means rare. There are in the collections of the Ecole and the Museum of Comparative Anatomy, ten or twelve cases of stiffness, with or without luxation, of the first vertebra with the condyles of the occipital. Thus, in the present case, there was inflammatory engorgement, acute or chronic, of the ligaments uniting the vertebræ and the occipital: and as the nerve of the ninth pair passes out by the foramen in front of the occipi-

tal condyle, this nerve must have been either compressed, or altered in its tissue at the point of exit; it must then have become atrophied, and hence the paralysis and atrophy of the left part of the tongue.

The treatment in this case was energetic; for, as the disorder appeared to vanish from the left side, it was found to have some tendency to migrate to the right—the patient beginning to complain of similar, though slighter symptoms on that side. Cupping was freely practised and frequently repeated behind the mastoid processes, and moxas were afterwards employed. The results were satisfactory. I have only to add, that this case of palsy and atrophy of half the tongue appears to me to be a very important one: I have never met with another example of it; and I am not aware that other physicians have given an account of any similar complaint.—*Dupuytren's Clinical Lectures.*

20. *Remarks on Local Diseases—Pathology of the Diseases of the Digestive System.* By WILLIAM STOKES, M. D. Extracted from a lecture on the Theory and Practice of Medicine, delivered at the Medical School, Park street, Dublin. Session 1833-4.—Gentlemen, I commence with the digestive system. I am anxious to do this for several reasons, but for none more than this—that to the improvements made in the pathology of the digestive system we owe much of the rapid advancement of modern practical medicine. Before our time the pathology of the digestive system was very little known, and if not quite a *terra incognita* in medicine, there existed respecting it a great deal of misconception. The schools were deeply tinctured with the doctrines of the Humoralists and the Brownists; and this had the effect of giving rise to irrational theories and false notions of the true state of the system in disease. The humoral pathologists, who sought for disease in an alteration of the fluids alone, neglected the study of visceral lesions; and when they turned their attention to the digestive system, they only considered it, its secretions, and not its actual condition or the state of its sympathies. The liver, with them, was an organ of the highest importance, and the secretion of bile claimed a vast share of their attention. To it they gave a paramount influence, and to an alteration in its quantity and quality they attributed most of the changes which occur, not only in the digestive tube, but also in the whole system; and hence the great object of their practice was to attempt to restore its healthy condition, convinced that if this were once accomplished, every thing would go on favourably. From this too, arose the purgative plan of treatment in various forms of intestinal disease, a plan too often rashly pursued, even where there was unequivocal proof of inflammation in the digestive tube. Their sole purpose was to evacuate sordes, to produce a flow of healthy bile, and to eliminate depraved secretions; and they did this without possessing any knowledge of local inflammation, or of the effects of disease of the digestive system on other organs. The followers of Brown, on the other hand, only admitted disease of the digestive system in a state of intense, manifest violence, as for instance, ileus, or violent enteritis; but in the great majority of cases, they did not recognise intestinal inflammations, because their prominent symptom was prostration, or to use their own terms, an asthenic condition of the whole system. They saw nothing but prostration; they prescribed for nothing but debility; they gave wine instead of iced water; ordered bark instead of local depletion. They exasperated the disease by stimulants; and then, thinking they had not gone far enough, they heightened the stimulant and doubled the debility.

Another cause of the low state of pathology in former times was the general neglect of dissection. The fact is, that in fever there were no post mortem examinations made, until very lately. Morgagni, who did so much for pathological anatomy on almost every other subject, did little for fever, because he was afraid to dissect the bodies of persons who had died of a contagious disease. This was the idea which prevailed among the older pathologists; and hence this source of knowledge was avoided, and for many successive centuries the state

of the viscera in fever was a matter of speculation, doubt, and uncertainty. Even at the present day it is only done by the ardent pathologist, who cares not about filth and stench, and who had rather encounter the miasm of contagion than remain in the mists of error. Nothing is more common, I regret to say, even at the present time, than this:—A person says he has dissected cases of fever, and when asked whether he had examined the intestinal canal, he says that the intestines appeared healthy, but he did not make any particular inspection of them; he only opened the belly, and, finding no trace of inflammation in the peritoneum, he went no further. Now nothing can be more useless than such an examination. If we compare the information afforded by an inspection of the serous membranes of the three great cavities, we shall find that the least is given by an examination of that of the abdomen. Disease of the substance of the brain is rare without affections of its investing membrane, disease of the substance of the lung is exceedingly rare without the occurrence of disease of the pleura, but you may have most extensive and fatal disease of the intestinal canal without the slightest lesion of the peritoneum. In this point, therefore, it differs from the pleura, and from the arachnoid membrane. The fact of the rarity of disease of the peritoneum in cases of disease affecting the parts beneath, was noticed by Dr. Graves and myself, in our report of the Meath Hospital, and also by Mr. Annesley, in his account of the diseases of India. You will see cases of hepatic abscess, which present a distinct tumour externally, and where you can detect a perceptible fluctuation; and yet, if you examine these cases after death, you may not find any adhesions of the peritoneum, even in the situation of the abscess. You will find the mucous and muscular coats of the colon extensively destroyed, you will see the stomach all but perforated, you will meet with cases where the whole ileum is one extensive sheet of ulcerations, with no disease in the adjacent peritoneum.

In entering on the consideration of diseases of the digestive system, we shall begin first with the mucous expansion of the stomach and intestines, and then proceed to the affections of the solid viscera connected with them. The mucous surface of the stomach and intestines is of enormous extent and extraordinary sensibility, possessed of innumerable and powerful sympathies; its influence is felt by almost every organ in the body, formed for receiving and elaborating every thing destined for nutrition; its conditions, both in health and disease, are entitled to the deepest and most attentive consideration. To facilitate the study of its affections, and for the sake of some practical arrangement, we shall divide its diseases into five classes, beginning with the œsophagus, or that portion of the digestive tube which is above the diaphragm, and then proceeding to the stomach, duodenum, ileum, colon, and rectum. But in order to give you a clear idea of diseases of the intestinal canal, I shall commence with diseases of the stomach; because, if you consider the whole range of animal life, you will find that its functions are the most important, the stomach constituting, as it were, the source and fountain of life, which is nutrition, and giving by its existence a character to all the upper classes of animals. No organ possesses such remarkable sympathies as the stomach, whether we look upon them as sympathies of organic or of animal life, none possesses such remarkable power and influence in modifying the conditions of every part of the system. But, putting aside physiological reasons, let us come to practical matters. The success of almost every form of medical treatment, all the advantages to be derived from the administration of internal medicine depend upon the stomach; in fact, in whatever point of view we consider it, we must look upon a knowledge of the state of the stomach as the great key to sound and successful practice.

It is a most useful reflection to consider the extraordinary frequency of disease in some portion of the digestive tube. It is now admitted by every person possessed of experience in the causes of mortality, that more human beings die with acute or chronic diseases of the digestive tube than with diseases of any other part of the system. This has been established by numerous investigations, and is admitted by the best pathologists; and, indeed, I think it can be

easily accounted for, when we call to mind how many persons die of some form of fever or other, when we look to the ravages of remittent and yellow fever, to the hundreds of thousands who annually perish by the various classes of fevers. Now in almost every one of these cases, disease of the digestive system forms one of the most prominent pathological characters. Recollect, besides, all that die of dysentery, whether sporadic or simple, and here is inflammation of the colon; see too, how many die with diarrhœa,—here too, there is intestinal disease; remember how many die of the malignant intermittent of the West Indies, in which unequivocal proofs of disease of the stomach and intestines have been found. Observe what a close connexion there is between *tabes mesenterica*, and inflammation of the mucous membrane and surface of the intestines; think what a vast number of persons fall victims to the harassing effects of constipation and dyspepsia; and recollect that there is a host of diseases in which the train of morbid phenomena commences in the digestive system, and then exhibits itself by functional alteration or organic disease of other parts.

Gentlemen, we recognise the presence of disease in the digestive tube, first by the local phenomena and the lesion of the digestive function, and next by the sympathetic relations of other parts, by the sympathies of the respiratory system, of the circulation of the skin and of the nervous system. I shall enumerate the local phenomena and functional lesions: vomiting, anorexia, thirst, jaundice, pain, tenderness on pressure, tympanitis, changes in the character and quality of the discharges, constipation. Here are a set of functional lesions and local phenomena, let us now consider the sympathetic relations; these are fever, heat of skin, suppression of the cutaneous secretion, suppression of the secretion of urine, morbid states of the tongue and pulse, pains in the chest and cough, hurried breathing, and palpitations of the heart. In the next place, we may have prostration of strength, delirium, coma, convulsions, tetanic spasms, and other symptoms of functional disease of the brain; these are all sympathies of relation. Now, in the first place, I have to remark, that there is a great deal of variety in the combination of these symptoms. On what does this depend? on a variety of circumstances; sometimes on the intensity or extent of the inflammation; sometimes on the situation of the disease; sometimes on the complication of the affection; sometimes on the various modes and degrees of susceptibility of the individual. All these causes tend to produce a great variety in the disease, and an extensive modification of the sympathetic relations. For instance, in some cases, inflammation of the stomach and intestines is so slight that the patient is not prevented from going about and pursuing his ordinary avocations; in others, on the contrary, the patients are struck down at once by the violence of the disease, and are carried off by the fever which accompanies it before the inflammation is completely developed. It varies also according to situation; there is a difference between gastritis and dysentery, in the former we have an inactive state of the great intestine, and consequent constipation in the latter, the colon is thrown into violent action, and there are frequent dejections. Disease of the duodenum is attended with a very remarkable peculiarity, being very frequently complicated with jaundice; here is a modification produced by situation. Again, inflammation of the ileum is attended with a very curious peculiarity, namely, the absence of pain. The patient states, that he feels unwell, he has obscure symptoms of intestinal disease, but it is neither dysentery nor gastritis; you investigate it with care and find that the ileum is in a state of inflammation. Yet the patient does not complain of any pain, and this is another peculiarity depending on situation.

But in considering the differences which depend upon intensity, extent, and situation of disease of the intestinal canal, we must not omit those which depend upon tissue. If disease be confined to the mucous membrane of the intestines alone, we may have an extremely diffused and extensive inflammation sufficient to destroy life, without any pain being complained of by the patient, it is a painless though fatal disease. Recollect this, extensive and fatal inflammation without pain. In former times the ideas of pain and inflammation were

inseparable. Thanks to the light which pathology has shed upon modern medical science we are now acquainted with this seeming anomaly, and can conceive the existence of extensive disease of mucous surfaces unaccompanied by pain. But let the inflammation seize on the muscular tissue, the character of the disease is instantly changed, and the pain is dreadful. Here is a case in which difference of tissue is to be taken into consideration.

The phenomena and sympathetic relations of intestinal disease may vary also according to its complication, and here we come to investigate one of the most beautiful laws of the human economy, namely, that the more complicated a disease is the more latent will be any local lesion. This is a point that should never be forgotten. For instance, enteritis by itself is much more easily recognised than when complicated with pneumonia, or with irritation of the brain, and gastritis is but too often completely masked by being combined with irritation of the bronchial mucous membrane. Lastly, we have the varieties which depend on different degrees of susceptibility. In one person we may have only slight cerebral irritation, in another high excitement, in a third delirium and extraordinary convulsions. The variety, then, in the modifications of disease, and the combination of sympathies is very great, and is referable to the extent and the intensity of the inflammation, difference of situation, complication of disease, difference of tissue, and different degrees of susceptibility. I shall give examples of these at my next lecture, and then proceed to the pathology and treatment of gastritis.—*Lond. Med. and Surg. Journ. January 4th, 1834.*

MATERIA MEDICA.

21. *Formulæ for Preparations of Hydriodate of Iron.*—M. PIERQUIN who has successfully employed the hydriodate of iron in amenorrhœa and leucorrhœa, has published in a recent No. of the *Bull. Gen. et Therap.* the following formulæ:—

1st. For pastilles. *R.* Hydrod. ferri, $\mathfrak{z}\text{j.}$; pulv. croc. sativ. $\mathfrak{z}\text{iv.}$; sacch. alb. $\mathfrak{z}\text{viiij.}$ M. fit. 240 pastilles. 8 or 10 grains to be given daily, and the dose gradually increased.

2d. Tincture. *R.* Hydrod. ferri, $\mathfrak{z}\text{ij.}$; alcohol, aq. puræ. āā. $\mathfrak{z}\text{ij.}$ M. A tea-spoonful night and morning for an adult.

3d. Enemata, injections and lotions. *R.* Hydrod. ferri, $\mathfrak{z}\text{iv.}$; aq. puræ. $\text{℥}\text{ij.}$ M.

22. *Ointment for the Cure of Porrigo.*—M. BIETT considers the following as one of the most powerful agents for the cure of porrigo:—*R.* Ioduret. sulph. $\mathfrak{g}\text{j.}$ to $\mathfrak{z}\text{ss.}$; axung. $\mathfrak{z}\text{j.}$ M. A drachm is usually employed at each friction.—*Bulletin Gén. de Therapeutique, Tom. IV., 1833.*

23. M. AUBERGIER'S *Pomatum for Preventing the Hairs from Falling Out.*—*R.* Prepared marrow of beef, $\mathfrak{z}\text{vj.}$; sweet almond oil, $\mathfrak{z}\text{ij.}$; red Peruvian bark, $\mathfrak{z}\text{j.}$ The powdered bark is to be moistened with a small portion of the almond oil, and the remainder then added; when the mixture is made, the marrow is to be melted at a moderate heat, and gradually added to the preceding ingredients in a mortar, and rubbed together until cold. It is asserted to have never failed in preserving the hair.—*Ibid.*

24. *Improved Method of Administering Epsom Salt.*—Dr. JAMES HENRY, of Dublin, recommends the sulphate of magnesia given according to the following formula as an agreeable, safe and efficacious purgative. Saturate any quantity of cold water with sulphate of magnesia; filter through paper, and add to every seven ounces of the solution one ounce of the *dilute* sulphuric acid of the Dublin or Edinburgh pharmacopœias.

Dose.—One table-spoonful in a wine-glass of water.*

In those cases in which the bowels are very easily moved, a single table-spoonful is sufficient to produce a considerable purgative effect.

In ordinary cases, a table-spoonful taken an hour or two before breakfast produces one or two evacuations immediately after breakfast.

In other cases, the dose is to be repeated once or twice, at intervals of two or three hours, according to circumstances.

Where the symptoms are urgent, a table-spoonful may be given every hour until the effect is produced; and where the urgency is extreme, a saturated solution of the salt, containing only one-half of the above-mentioned quantity of acid, may be given in doses of two table-spoonfuls, repeated every hour.

This combination of sulphate of magnesia and sulphuric acid, administered according to the preceding directions, possesses the following properties.

1. It is an effectual purgative, never failing to move the bowels in all cases in which the bowels can be moved by medicine. I am not acquainted with any purgative which is more certainly effectual.

2. It is quick in its operation; the effect being produced in ordinary cases within two or three hours after the first or second dose, and a necessity rarely arising for the continuance of the medicine beyond the third dose.

3. It is safe, never purging so as to produce exhaustion.

4. It does not give rise to the slightest degree of nausea, but, on the contrary,

5. Quickly puts a stop to nausea, and appeases irritability of the stomach.

6. Flatulence, that most distressing attendant upon constipated bowels, is immediately and signally relieved by this medicine, which not only promotes the expulsion of the *flatus* already generated, but diminishes the tendency to its further secretion.

7. In a few minutes after this medicine has been swallowed, so agreeable a sensation of warmth is felt in the stomach, that the medicine is not only readily taken, but even relished by many persons whose stomach will not retain any other liquid purgative, unless impregnated with the hottest aromatic tinctures.

8. The operation of this medicine is not attended by either sickness, faintishness, or griping. In this respect the acid saline solution possesses a remarkable superiority over all the purgatives in common use.

9. This medicine can be taken every day, or every second day, for a considerable length of time, not only without impairing the stomach or other digestive organs, but with manifest advantage to them.†

10. The continued use of this medicine does not produce that irritation of the *rectum* which so commonly attends the continued use of other purgatives.

11. This medicine is not disagreeable to the sight, being perfectly limpid and transparent as the purest spring water.

12. It has no smell.

13. The bitter nauseous flavour of the sulphate of magnesia being almost completely hidden by the acid, the taste of the solution can hardly be said to be at all disagreeable, and is certainly much less so than that of most other liquid purgatives.

14. It is cheap.

15. It is easily procured everywhere.

16. It keeps for an unlimited length of time.

From the experience of three years, during which I have made daily use of this purgative in the course of my practice as a physician, I have ascertained that the acid saline solution possesses the properties which I have just enumerated.—*Edin. Med. and Surg. Journ. January, 1834.*

* Each table-spoonful contains about two drachms of sulphate of magnesia, and half a drachm of dilute sulphuric acid.

† The frequently repeated contact of the acid saline solution being injurious to the teeth, it is useful to adopt the precaution of taking the medicine through a quill, or from the spout of a small tea-pot, whenever it is necessary to continue its use for any length of time.

25. *On a preparation of Opium.* By J. C. BOSWELL, Esq. Assistant Surgeon, Penang.—I have been using for a considerable time past, in the Hospitals under my charge, a preparation of opium as a substitute for the liq. opii sedit. and tinct. opii, which I now beg leave to bring to notice, as I feel desirous to obtain the opinion of others relative to its virtues. The preparation I am now using, was made soon after I was put in charge of the Medical Stores.

Having occasion to make a quantity of the tincture, I felt at a loss what to do with the residue after the tincture had been strained, when on reference to Paris' Pharmacologia, (see Note, Art. Opium,) it is stated, that Mr. Haden had macerated the dregs in a solution of tart. acid. and had found the product as strong, and superior to the tincture, inasmuch as it was devoid of either stimulating or binding qualities. After the trials I have made, I think I can almost confirm that statement.

My solution was made by adding about two-thirds the quantity of water, which I had previously obtained of tincture, with what I deemed sufficient of tart. acid. the solution was frequently shaken, and left for a month, then filtered. The dose I usually give is, from gtts. 50, to ℥j.—*Trans. of Med. and Phys. Society of Calcutta, Vol. VI.*

26. *Opium used at the General Hospital, Calcutta.* By W. TWINING, Esq.—I have used the opiate solution sent from Penang by Mr. Boswell; the quantity would not allow of any to be spared for chemical analysis, so as to ascertain the relative proportion, and exact nature of the solid matter in this medicine. It would be desirable to ascertain from Mr. B. whether the dregs left after the preparation of laudanum, were used in making this medicine in a wet or dry state;—also, what were the exact proportions of tartaric acid and water employed.

The whole of the solution was administered to sick and convalescents in the General Hospital, and it appears to possess considerable efficacy: its anodyne and soporific properties do not seem equivalent to half the strength of vin. opii; but its action is peculiar, and if the present trials will enable me to judge correctly, I should state that it is a less exciting opiate than laudanum, when administered to patients in an irritable condition, and suffering from a slight degree of pyrexia; it is less liable to affect the head, or to produce constipation of the bowels, and is seldom or never followed by disorder of the stomach or impaired digestion, and it has a greater tendency to produce perspiration, than either laudanum, or vin. opii. Patients who had been in the habit of taking large quantities of laudanum, were unwilling to acknowledge that the opiate solution, now alluded to, had any evident effect either in the dose of one or two drachms.

Since the above report was drawn up, I have obtained twenty-one pints of anodyne solution prepared by dissolving ℥xxi. of tartaric acid in twenty-one pints of distilled water, which was carefully mixed with the dregs left after making sixty-three pints of laudanum, according to the formulæ of the London Pharmacopœia. Jeremie's opium was used in making the laudanum, and after it was filtered, the whole of the dregs were left on the filter for fourteen days; being then in the state of a tough paste, and about as firm as an ordinary mass for making pills, the above solution of tartaric acid was mixed with the mass, and the fluid stirred daily for fourteen days, and then strained. The relative proportion of water is only half as much as Mr. Boswell used. The medicine prepared in this way is about as high-coloured as equal parts of claret and water: it is transparent, and a mouldy coat forms on the top of the fluid in each bottle in the course of ten days.

I have used the whole 21 pints of this solution in cases of severe pains of the bones and joints, affecting men who were emaciated and had broken constitutions from long residence in India, and from the frequent use of mercury. These patients were the military invalids who arrived this season from the Upper Provinces, in the course of transmission to Europe. The medicine was of the greatest benefit to patients of this class, who earnestly requested its re-

petition after having once experienced its effects. It was usually followed by a warm perspiration extending over the whole body and extremities; and the patients procured more refreshing sleep than after any other opiate. I believe its exhibition never caused head-ache, and it seldom or never produced constipation of the bowels: in upwards of 40 patients who took this medicine, only one complained of constipation. In one case of most excruciating pains arising from irritable ulcers of long duration, the patient procured comfortable sleep, and was entirely relieved of his pains by doses of $\mathfrak{z}\text{iv}$. of this solution given every night at bed-time. This patient is a Greek, who had formerly used large quantities of opium. Another patient with irritable ulcers and severe pains in his limbs always slept well after taking doses of $\mathfrak{z}\text{iii}$. every night. No other patient required a larger dose than $\mathfrak{z}\text{ii}$. I have administered this preparation of opium, with great benefit, in the dose of $\mathfrak{z}\text{ss}$. twice a day, combined with ten minims of Fowler's solution of arsenic, in some cases of irritable ulcers; and in irritable eruptions of great obstinacy and long continuance; in which many other remedies had previously produced no evident benefit.—*Ibid*.

PRACTICE OF MEDICINE.

27. *Sulphate of Quinine and Tobacco taken as Snuff in the Treatment of Intermittent Head-aches*.—Dr. D'HUC says, that he has employed with success in intermittent cephalalgias, a snuff composed of fifteen grains of sulphate of quinine mixed with an ounce of tobacco. The whole is to be taken during the course of five or six days.—*Rev. Méd. May, 1833*.

28. *On the Employment of Chlorine in Pulmonary Affections*.—The *Transactions Médicales* for February, 1833, contain an interesting article on this subject by Dr. BOURGEOIS. This physician having seen two apparently desperate phthisical patients relieved, without being submitted to any medical treatment, but who resided at a bleaching establishment near St. Denis, the atmosphere of which is impregnated with chlorine, was induced to form a similar atmosphere in the chambers of some young phthisical patients in the Royal School at St. Denis. This medication, though it did not cure these patients, ameliorated their condition, diminished their dyspnœa, promoted sleep, gave them appetite, destroyed the fœtor of the sputa, and changed it from sanious to mucous. These advantages lead M. B. to hope that in the earlier stages of the disease it may effect a cure; in those in which it was resorted to by M. B. there were large purulent collections in the lungs.

29. *Iodine in Mercurial Salivation*.—In our last No. we stated that iodine had been successfully employed in Germany as a cure for mercurial salivation. We are now enabled to furnish some further details as given by Dr. KLUGE of Berlin, in *Hecker's Medical Journal*.

“Professor Knod Von Helmenstreitt, in Aschauffenburg, was the first who recommended *iodine in mercurial salivation*. (See Hufeland's Journal, May, 1832.) As the syphilitic wards of the great hospital, (Charité,) in Berlin, afford numerous examples of this affection, I determined to give iodine a fair trial, and for this purpose I selected seventeen cases, viz. twelve women and five men, all of whom laboured under severe mercurial salivation. Helmenstreitt's first directions were to dissolve five grains of iodine in two drachms of spirit of wine, to which two ounces of cinnamon water, and half an ounce of syrup are to be added. Of this the patient was to take at first half a tablespoonful four times a day, which dose was to be gradually augmented two, four, six, or even eight grains daily. His latter directions prescribed two grains, or even more, the first day, which dose was to be rapidly increased.

“Two young women who lost four or five pints of saliva daily, were cured

in three days by eight grains. One man and one woman got well in four days, having taken ten grains. In two men and four women the ptyalism ceased entirely in six days, during which each had taken from twelve to sixteen grains. In two men and two women the spitting was cured on the seventh day after iodine had been taken to the amount of from twenty to twenty-eight grains. In the latter cases it was, however, remarked, that the great pain of mouth and fœtor of the breath were notably diminished after one day's use of the iodine. In two young women the remedy appeared at first to be of little or no use; in both the salivation amounted to three or four pints daily at the termination of the seventh day, and the only advantage gained appeared to be a certain diminution of soreness of mouth. One of these patients was then obliged to desist from the use of the remedy on account of some constitutional symptoms, and I looked upon this case as a failure. This conclusion was however too hastily made, for the good effects of the iodine began to appear on the following day, and on the third day after she had left it off, that is, on the eleventh from the date of its first exhibition, all morbid secretion of saliva had disappeared, and the gums had very nearly recovered their healthy appearance; in short, the patient had recovered, having consumed thirty-four grains of iodine. In the other young woman we stopped the exhibition of iodine on the tenth day, at which time she had taken thirty-six grains, with the effect of diminishing the daily secretion of saliva from five to three pints. On the twelfth day she was well.

"In one girl the accidental occurrence of erysipelas of the face prevented the continuance of the remedy. The use of the iodine did not produce in any one of these patients any disagreeable or untoward symptoms, and as I kept them all for some time in hospital after the salivation had ceased, I have the pleasure of likewise testifying that the cure was not only safe, but permanent."

Dr. Graves of Dublin, has also tried the effects of iodine in arresting salivation, with favourable results.—*Dub. Journ. of Med. and Chem. Sciences, Jan. 1834.*

30. *Treatment of Chronic Bronchitis.*—Dr. CRAIGIE, in an interesting report on the cases treated in the Royal Infirmary, contained in our Edinburgh cotemporary for January last, states that the remedies under which recovery from bronchitis was most readily effected were, blood-letting from the arm to the amount of sixteen or eighteen ounces, followed by the detraction of blood from the chest between the shoulders, by cupping or leeches, or both, or from the anterior part of the windpipe by leeches, blisters between the *scapulæ*, and a mixture of squills and antimony, with opiates. In some Dr. C. found a powder consisting of one drachm of supertartrate of potass, half a drachm or a scruple of carbonate of soda, and ten grains of nitrate of potass, of great use in cases in which there was reason to apprehend, from the scantiness of the urine, that the disease was passing from the bronchial membrane to the submucous tissue, and beginning to effect the circulation of the lungs.

In several cases of the chronic disease Dr. C. tried the tincture of the *Lobelia inflata*; but in one only, in which other remedies were also used with benefit, did it seem to be productive of advantage.

In cases of chronic *bronchitis* of aged enfeebled subjects, with excessively profuse secretion of frothy mucous fluid, Dr. C. found acetate of lead and opium in doses of three or four grains of the former to half a grain of the latter, three times daily, of much use. This remedy required to be alternated with the use of the compound colocynth pill, or a small dose of castor oil every second or third day, according to circumstances, in order to obviate the effects of constipation.

Another agent equally powerful, and not so liable to injure, in the treatment of chronic *bronchitis* with profuse secretion, is according to Dr. C. the sulphate of zinc, with extract of *hyoscyamus* or opium; in doses of one or two grains of the former, to two or three of extract of *hyoscyamus*, and half a grain of opium.

Its effect is not merely to check undue secretion by its astringent power, but

by operating on the capillaries generally, and those of the bronchial membrane in particular, it tends to restore their natural properties, and propel their contents in the proper channels.

31. *Remarks upon the Nature of Neuralgias, and their Treatment.* By M. PIERRE.—As the vast majority of neuralgic affections do not terminate fatally, the lesions which they may produce in the nervous tissue, remain as yet almost unknown; and it is impossible for us to decide whether an irritation, or even indeed a hyperemia has, or has not existed. The larger proportion of cases of pharyngitis treated at the hospitals Salpêtrière and La Pitié, though exhibiting a short time before death all the symptoms of this affection, when examined after death, offered no traces whatever of the disease. If such is the case in inflammations of the mucous membranes, may we not with more reason attribute to the affections of the nervous system a similar series of phenomena. The morbid lesion which attacks the nervous trunk, may in like manner affect separately and independently the numerous filaments which enter into its composition, and which are so exceedingly minute, that the anatomist labours in vain to isolate them. How is it possible then, for us to decide upon the different shades or tints which these filaments may assume. This circumstance is deserving of recollection, for it is by the colour of the nervous matter of the brain, that the pathologist pronounces upon the previous existence of inflammation in this organ. The blood-vessels supplying these nervous filaments are also so exceedingly minute, that to be able to appreciate in them a state of hyperemia, it is necessary that they should be enormously enlarged. Moreover, the cellular tissue of a nerve, which connects its filaments to each other, may take on inflammation, and present a red colour, without the filaments themselves being at all concerned. The causes which operate in the production of neuralgic affections, are the same which produce in other organs irritation and hyperemia. A contusion, pressure, violent and sudden muscular contraction, a carious tooth operating as an irritant to the nerve supplying it, an organic lesion of the heart, an articular rheumatism, which, whatever may be said to the contrary, is in fact an inflammation of the joints; a tumour situated upon a nerve, an active inflammation of the surface of the body, extension of the inflammatory action from the intestines to the nerves supplying them, certain movements of the muscles of the head, acting upon some of the neighbouring nerves, extension of the irritation which accompanies cancer, and the pressure which an enlarged gland sometimes produces upon a nerve, are some of the appreciable causes which tend to produce these affections; and although we are unable to seize upon these, or similar ones in all cases, yet we should not conclude on this account, that they were not present, but rather ascribe to the imperfection of our means of investigation, their escape from our senses! The group of symptoms does not distinguish neuralgia from neuritis, only the one is transitory in its effects, whilst the other remains stationary for some time. This is to be attributed to the morbid action resting in the first case at its first or mildest stage, whereas, in the second, it passes on to its second, or most violent degree. Perhaps the one may be considered as bearing the same relation to the other, that a cerebral congestion does to a softening of the brain. This comparison, it is true, does not throw much light upon the nature of the case, for we have yet to form positive opinions relative to cerebral congestions and cerebral softenings; nevertheless, the analogy between the two affections is so strong, that it may be well to make use of the simile. Because the pain is not augmented by pressure, because it assumes various characters, because it may be subject to remissions, and because there is neither redness, heat, nor swelling, nor indeed any of the precursors of inflammatory action present, we must not conclude, that no congestion or inflammation of the nerve exists; for pressure does not always produce pain in cases of congestion or inflammation in other parts. Moreover, the hyperemias which succeed to a lesion of a nerve, or which may accompany it, are subject both to variations in

their nature, as well as to remissions. Again, from the nerve being invisible, it is of course impossible to observe the different changes in colour, the degree of heat, or of swelling which it may undergo; and finally, there are many cases of inflammation, in which none of the precursory or pathognomonic symptoms of this condition show themselves. M. Andral has well observed, that the symptoms given by authors as characterizing these affections, may lead us to mistake a neuralgia for a neuritis, and vice versa. He considers the best means of distinguishing the two affections from each other, to be the augmentation in volume of the nerve affected with neuritis, but unfortunately in the great majority of cases this augmentation cannot be detected. The results of different methods of treatment do not establish more definitely the differences that exist between the two diseases, for it has happened, that in cases which were essentially neuralgias, sanguine evacuations either produced an amelioration of the symptoms, or cured them completely, or changed them from continued to intermittent, and this too as speedily and as effectually as they did in cases which were considered as well marked neuritis. On the other hand, the sulphate of quinine operated very beneficially in a case, the intermittent symptoms of which seemed to be dependent upon neuritis, which had originally been accompanied by a physical lesion of the nerve, (a neuroma.) It most frequently proves useful in those cases in which the previous application of leeches had produced decided relief. Hence, even admitting theoretically, that the neuralgic affections constitute two degrees in the lesion of a nerve, or even that they are essentially different in their nature, it must be confessed, that neither the pathological phenomena, nor the symptoms, nor indeed the treatment, furnish signs sufficiently well-marked to induce us to form very different therapeutic indications for these two morbid conditions.

The same remarks apply to the efforts which have been made to establish a diagnosis between neuromyelitis and neurilemmitis. The observation of Riel has been copied by every one, without its truth having ever been properly ascertained; it would have been much better to have tested its truth by repeating his experiment, and until it is positively shown that the neurilema of a nervous filament may take on a state of inflammation, whilst the pulp it contains remains unharmed, and vice versa, we cannot give credit to the subtle divisions made of this class of diseases, which divisions were certainly never deduced from sound pathological investigation. The neuromas mentioned by Galen, Valsalva, and Petit, and upon which MM. Dupuytren, Alexander, Boisseau, Beclard, Descot, Andral, Schiffner, and Cruveilhier, have published such important and interesting observations, seem in some cases to be dependent upon the previous existence of some cancerous affection, and in others to result from the morbid action which constitutes neuralgia and neuritis, which affections in turn make their appearance. Their symptoms are the same, though the treatment is different, for in these cases we know positively the situation of the organic lesion, and also that where other remedies have failed, an operation is absolutely required to effect a cure. There are, however, certain distinctions which may be drawn between the neuralgias and the neurites, according to the nature of the causes producing them, or the peculiar nerve attached. M. Lember, who has published some very useful observations upon the endermic method of medication, is induced to believe from several facts which he has noticed, that certain nerves, which he thinks are more vascular than others, and which preside over the functions of touch and nutrition, such for instance, as the branches of the fifth pair, are more disposed than the other nerves of the body to attacks of neuritis, and less to attacks of neuralgia, and that sanguine emissions are more useful in the first class than in the second. Experience and future observation upon the functions of the different nerves must decide the merits of this opinion. In all cases where the nerve undergoes a morbid alteration sufficiently violent to give rise to symptoms, a peculiar pain, which is propagated through all the nervous ramifications, and which in some cases seems to proceed from the branches to the trunk, manifests itself. The sensation

produced, is that of stiffness or painful numbness, accompanied by a pricking and vibratory feeling, which continues a longer or a shorter period, according to the nature of the circumstances that determine its production. If the exciting cause suddenly ceases to operate, and if the lesion sustained by the nerve has been trifling in its extent, the pain gradually subsides, and in a short time every thing re-assumes its original healthy action. (The pain caused by pressure of the cubital nerve at the elbow-joint, or of the sciatic nerve where it emerges from the pelvis, or in the popliteal space, and that produced by the pressure of the child's head during labour, may be cited as examples of this kind.) If, however, the exciting cause is more violent in its operation, the painful sensations continue for a longer time, or should they perchance abate or disappear for a time, soon return. The exacerbations take place from time to time, and in some cases obey the law of periodicity, for in disease, as well as in health, the nervous functions possess a tendency towards intermission. (The pain caused by a carious tooth, constituting odontalgia, that produced by cancerous tumours in the arm-pit and uterus, which irritate or compress the nervous trunks of the arm and thigh, &c. may be placed among the examples of this species.) In these cases the pain persists as long as the cause producing it continues to operate, and is incurable unless the latter be removed. The pain which is at first confined to the trunk, or filament affected, may gradually extend itself to the neighbouring nerves, (odontalgia following some of the various neuralgias of the face,) or it may make its appearance in several points of the nervous system at the same time. In these cases the secondary neuralgic symptoms may generally be relieved, but it is not until the primitive affection is recognised and eradicated, that we can trust to their non-appearance again. Consecutively to the operation of either a transitory or persistent cause, the nerve may become the seat of a simple irritation, which cannot be conceived to occur, except in cases of anemia or chlorosis, without a congestion of the sanguine capillaries, since all organs in a state of excitation have their capillaries injected. In this case, however, we are obliged to acknowledge the existence of such a state of things, by analogy alone, since it is impossible to examine the peculiar condition of the nerve during life, and if examined after death it does not present the same characters, which it would have done if observed during the existence of pain. Yet in cases of iridian or ophthalmic neuralgia, as soon as the symptoms declare themselves, the eyelids and the neighbouring parts are found to be in a state of congestion; if the disease is confined to this degree of excitement and primitive congestion, we have only a neuralgia produced. When an attack of neuralgia has existed for any length of time, it frequently happens that there exists great tendency to a relapse, notwithstanding the original cause of its appearance has been completely eradicated. It seems in these cases that the system acquires a sort of habit, which it is extremely difficult to overcome. If the cause has operated with violence, or is continued for any length of time, or should the disease be augmented a degree in intensity, an inflammation of the nerve may be the result. The neuritis thus brought about may be either followed or accompanied by hypertrophy of the nerve; by a deposition of blood or pus between its filaments; by the formation of hard or scirrhous tumours in its substance; or of small cysts, the parietes of which are hard, and contain a sort of gelatinous fluid; or of encephaloid degenerations, &c. The pain experienced in the nervous trunk, or in its filaments, is so peculiar in its character, that it is impossible to confound it with any other. *It resembles precisely that which is perceived when the inner side of the elbow-joint is suddenly pressed upon or struck.* In doubtful cases of chronic rheumatism or gouty arthritis, or of musculitis, &c. the absence or presence of this peculiar sensation will decide at once the character of the affection, and it is important to bear in mind this fact in the examination of our patient.

Treatment.—Reasoning from the facts just given, the indications to be observed, and the course to be pursued in the treatment of neuralgias, seems to be as follows. 1st. Endeavour by all possible means to find out the material

or organic cause which has produced, or which is at the time operating in the production of either the neuralgia or neuritis, and destroy it if possible at once.

Examples. (Extract the carious tooth in odontalgia dependent upon its irritating properties; prevent certain muscular movements which seem to operate in the production of the disease; remove tumours situated upon the nerve, &c.) should the organic cause be entirely beyond the reach of our therapeutic agents, (as for instance in cancer of the uterus determining nervous pains,) we must content ourselves with the administration of such palliatives as we may possess. If the disease still persists after the removal of the cause which produced it; or should the cause escape our means of investigation; or the attack be of recent occurrence, or even chronic in robust subjects, and sometimes also in persons of a nervous temperament; it will be well, before resorting to any other method of treatment, to try the effect of antiphlogistic remedies. The extent to which these should be carried, must of course depend upon the quantity of blood the patient can afford to lose; which circumstance may be determined by an examination of his arteries, veins, and capillary circulation, and by the percussion of such organs as are highly vascular, and capable of containing large quantities of blood. General blood-letting which proved so successful in the hands of Cotugno, may occasionally be resorted to; but copious local depletion effected by the application of a large number of leeches along the course of the affected nerve, together with rest and poultices, repeated pro re nata, is the course of treatment usually pursued in this stage. Those who doubt the efficacy of sanguine evacuations in such cases, have either not properly studied their effects, or have seen them employed with too much rashness, or with too great timidity. What have we to fear from blood-letting? Is it the momentary debility which it produces? If the precautions which we have elsewhere indicated are observed, the syncope can never become so excessive as to prove dangerous. (Vide *Procede Oper. de la Percussion, &c.* p. 249.) Is it consecutive debility? If, in the first instance, we do not establish in the system a dangerous degree of debility, by extracting too large a quantity of blood, is there any reason why we should anticipate the occurrence of a consecutive one? Is it the tediousness of the convalescence? This will only take place when the patient is confined to a vigorous diet. At La Pitié, where sanguine emissions were carried to a great extent, but the patient at the same time properly nourished, the transition from a state of disease to perfect health, was, in the majority of cases, almost immediate. Moreover, the animals used in the experiments on this subject, and from whom large quantities of blood were extracted, speedily regained their usual quantity of this fluid. We should not, therefore, doubt the importance of blood-letting in these cases, but it is true that it must be conducted with prudence, and with a proper knowledge of its effects. In the hands of those familiar with its powers, it can never prove dangerous; it only becomes so when ordered by the inexperienced and rash. If the symptoms are ameliorated by this plan of treatment, it should be continued; but we must recollect, that although sanguine emissions when early prescribed are not generally productive of danger, it is not so with those used at a later date. We should, therefore, be guarded in ordering a repetition of this evacuation. These remedies alone frequently prove sufficient to effect a radical cure. When the antiphlogistic remedies have been tried without success, and where the disease does not manifest a tendency to assume an intermittent type, we may resort to the application of vesicatories along the tract of the nerve, according to the plan of Cotugno, which in his hands was very successful. The blister should be allowed to remain but a short time in one spot, and must then be applied to another in the neighbourhood. The form of the blister is also of some importance. In general it should be long and narrow, so as to apply itself to the part of the nerve. Almost every practitioner has witnessed the success of this remedy. In several instances, however, the blister has failed to produce the anticipated effect; we may here denude the cutis of its cuticle, and resort to the endermic method of medication. The narcotics, for instance, the acetate, and

particularly the hydrochlorate of morphia, the stramonium, belladonna, henbane, &c. may all be resorted to. In some cases we have found this method prove exceedingly useful, in others again it has entirely failed. A woman of the Salpêtrière had complained for several days of an acute pain in the temple, which seemed to be neuralgic in its character; a blister was ordered to be applied to the part, for the purpose of removing the cuticle, and the denuded cutis to be sprinkled over with a grain of the hydrochlorate of morphia. The day after the application of the blister, the patient expressed himself as entirely relieved. All the benefit derived was attributed to the application of the opium; it was found afterwards, however, that the opium had not been applied, and that the blister alone had effected the cure. To avoid for the future, attributing to the absorption of some remedy, that which is due to the operation of the blister alone, it would be well to apply the blister in a strip of about two lines breadth, and then place the narcotic upon the denuded surface, which of course will be exceedingly small. When the narcotic, opium, for instance, has failed when applied externally in producing its effects, we may exhibit it internally, either in the shape of an enema, or in a draught. These means, however, though they generally produce a momentary alleviation of the symptoms, rarely effect a radical cure. Should the symptoms appear periodically—whether after the lapse of a day or of several weeks, or of several hours, or even less time; if from the influence of sanguine emissions, the disease changes from a continued, with occasional exacerbations, to an intermittent form, we may resort to the administration of the sulphate of quinine in large doses, as if it were a case of intermittent fever! We must not trust to small doses, but give it in doses of ten, fifteen, and twenty grains; the largest dose being given immediately after the occurrence of the attack. If the succeeding paroxysms should be milder in their character, or the interval between them increased, we may either continue in larger doses the sulphate of quinine, or suspend its employment for several days, in order to be able to resort to it suddenly in very large quantities. In some cases it has seemed to me, that a repetition of the local sanguine emission during the paroxysm has been productive of benefit; and that the sulphate of quinine administered immediately afterwards operated more efficaciously upon the approaching attack. In cases of amenia, where the skin and lips are pale, and in young women whose organs contain but little blood, the sub-carbonate of iron sometimes produces the most happy effects, particularly in cases accompanied with irregular menstruation, and where the menstrual blood is paler than usual. Here we must be very cautious how we prescribe sanguine depletion. As the brain, in cases of syncope and anemia, frequently exhibits symptoms precisely similar to those produced by a congestion of its substance, in like manner may the nerves, in cases where there exists a deficiency of blood in the system, should they perchance become irritated, be accompanied by all the symptoms of irritation with congestion. When all our means have failed, and the treatment founded upon rational views of the disease proved unsuccessful, we might then have recourse to empirical remedies. The best to commence with are those which are supposed to operate with most safety to the patient. The pills of Meglin have sometimes proved useful; the essential oil of turpentine has also produced beneficial effects in the practice of M. Martinet. Finally, cauterization of the nerve, as practised by André, or its section which Galen is said to have resorted to, and which Nuck so highly recommends, and which in the hands of MM. Maréchal, Louis, Pouteau, Guérin and Delpech, has produced such varied effects, may be tried. Several very interesting observations upon this latter method of treatment, as well as many important facts in the history of the neuralgia's, will be found in a very remarkable and exceedingly erudite memoir, that has just been published by M. Halliday.—*Gaz. Méd. de Paris*, February 2d, 1833.

32. *Efficacy of Madar, (the powdered Bark of the Root of the Asclepias gigantea,) in Extensive and Obstinate Ulcers in Native Patients.*—A letter from J. L.

GEDDES, Esq. Assistant Surgeon, Madras Service, was read at the Society's meeting on the 4th Feb. 1832, containing the statement of a case in which the madar had proved remarkably successful in the cure of an obstinate ulcer. The patient was a Sipahce, of an Infantry Corps, who appeared to be of a scrofulous diathesis. The disease had existed for a year, and the patient had been at Masulipatam six months, to try the effects of change of air, before he came under Mr. Geddes' care. All former treatment had failed. The ulcer was of an unhealthy appearance: situated on the upper and outer part of the left hip, extending from the trochanter major, over the situation of the gluteus maximus muscle, in a circular form, being in circumference upwards of sixteen inches. The madar was administered in pills, in the dose of four grains, three times a day. By the time that a drachm and a half of the medicine had been taken, the sore assumed a healthy aspect, and began to cicatrize. After a few days there appeared some disposition at the upper part (where cicatrization had taken place) to ulcerate again. The madar was continued until another drachm was taken, and the sore was completely cured. The medicine did not appear to produce any effect on the constitution, except causing the sore to heal. No other remedy, either external or internal, was used at the same time with the madar, except a little simple ointment, which was spread over the surface, to prevent abrasions of the newly-formed skin; and a purgative was occasionally administered, so that the efficacy of the remedy was unquestionable.

A letter from Dr. H. Mackenzie was read at the Society's meeting, on the 3d of December, 1831, relating the case of a native boy, of Sandoway, aged 13 years, who had been ill about twelve months with inveterate ulcers. The bones of the left forearm were bare and in a state of caries; there were numerous ulcers affording a very profuse discharge, and sinuses about the forearm and elbow; the patient was miserably reduced, and unable to stand; he had tried all the ordinary resources of the district without benefit. The madar powder was given twice daily, at first in doses of two grains, and afterwards gradually increased to five grains, twice a day; in which quantity it produced uneasiness and a disturbed state of the bowels; therefore the dose was reduced to three grains. The beneficial effects of this medicine were very evident in a few days: at the end of a week the boy's health was decidedly improved, and the profuse discharges from the ulcers had decreased; the decayed portions of bone were then extracted. At the end of five weeks from the time he began to take the madar, all the sores had healed, and the boy was able to walk about. Dr. Mackenzie ascribes the early improvement of this boy's health, and his ultimate recovery, to the "restorative and invigorating properties of small doses of madar; which remedy was left to produce its individual effects, without the exhibition of any other medicine, capable of modifying them in any degree."—*Transactions of the Medical and Physical Society of Calcutta, Vol. VI.*

SURGERY.

33. *Extirpation of a Necrosed Clavicle, followed by complete Reproduction of the Bone.* By Dr. MEYER, Surgeon to the Hospital of Zurich.—Cases in which complete reproduction of the bone follows the excision of a diseased clavicle, are of extremely rare occurrence. Windmann mentions but one instance of the kind, Meyer two, and Mott one. The following observation is therefore important.

G. Menne, æt. 31, of a feeble constitution, had been subject from infancy to scrofulous ulcerations of the neck. In June, 1823, he was seized with violent pains, resembling the rheumatic in the right arm, for which he was treated by several physicians, but without any relief being obtained. The pain continued to increase; and finally, whilst on a visit to the baths of Baden, a tumour formed in the right axilla, which opened of its own accord, and from which an acrid,

ichorous fluid was discharged. General debility now supervened; his appetite disappeared; in short, all the symptoms of hectic developed themselves, and he was received into the Hospital of Zurich in the following condition, on the 8th of October, 1823. Great emaciation; feeble appetite; sleep imperfect, and frequently interrupted by violent cough, and hectic fever. An ill-conditioned ulcer existed opposite the acromial extremity of the clavicle, which bone was in part denuded. The probe penetrated readily about an inch along the upper face of the clavicle, which was found rough and uneven to the touch. In the centre of the sternum there existed a fistulous orifice, through which a probe might be passed from below upwards about an inch; the bone however was in a sound condition. Finally, a fluctuating tumour was discovered between the eye-brows. For fourteen days tonic remedies internally administered, accompanied at the same time by frictions, with volatile liniments, were prescribed. The ulcer was dressed with charpie soaked in tinct. of myrrh, and the bone moved daily with the forceps. The forces of the patient by these means improved; his appetite and sleep returned; the fever became less intense; the cough not so harassing; in short, he was so much improved, that I ventured to lay bare, by an incision, the acromial extremity of the clavicle, and extract a small portion of it with the forceps. By this means the acromial extremity was more completely exposed, and an attentive examination showed that the bone was denuded as far as its centre. About the fifteenth day the bone seemed to be a little looser, though it appeared nevertheless to be firmly united with the surrounding soft parts; its sternal extremity was also still strongly held by its capsule. At this time the constitutional symptoms increased in violence so rapidly, that I determined to operate at once.

The patient's arm being drawn forcibly forwards, in order to separate the clavicle as much as possible from the vessels which course along its posterior and inferior surfaces, I proceeded to divide with the bistoury the integuments and muscular fibres covering the anterior and inferior margins of this bone, then drawing it, (the clavicle,) as much as possible forwards, I separated it, partly with the fingers, and partly with the knife, from its connexions behind and above. I next proceeded to open the capsule of the sternal articulation, in doing which, whilst drawing the bone forcibly forward, the latter snapped off near its sternal extremity; the fragment which remained attached to the sternum was however easily separated from its adhesions and extracted. The operation occupied about five minutes, and was accompanied by little or no hæmorrhage. The patient already exceedingly feeble, sank into a state of exhaustion, from which however he was recalled by the administration of stimulants, &c. On the third day after the operation, suppuration of a healthy character established itself, and in the course of seven weeks the wound was completely cicatrized. After a time the tumour on the forehead was opened, and the bone found to be in a carious condition. This, however, as well as the fistulous orifice of the sternum, was in a short time cured. By degrees the patient's general health was reëstablished; the arm resumed its natural position; and in place of the clavicle extracted, a bone of recent formation, having precisely the form of a healthy clavicle, though apparently more delicate than natural, could be distinctly felt occupying the position of the original bone. He could also execute with the arm all the motions of circumduction, and daily employed himself in some manual labour. Up to 1828, the patient was enabled to attend to his affairs; at this period he was attacked with a pulmonary affection that carried him off in a short time.

Autopsy.—Between the clavicular socket in the sternum, and the point and superior margin of the acromion, there existed a fibrous, almost cartilaginous ligament, containing several ossified points, upon which rested the inferior surface of the recently-formed clavicle. The space comprised between these two points, and occupied by the ligament just mentioned, was four inches six lines in length. The new bone was three inches ten lines in length, delicate, flattened towards the sternum, and more rounded towards its acromial end.

The sternal extremity was larger and thicker, and united itself to the corresponding sternal facet by a well-marked articulating head. The bone terminated about an inch from the acromion in a thick apophysis, between which and the acromion there extended a broad, thick ligament, containing several ossified spots. The upper border of the clavicle was convex towards the sternum, concave towards acromion, and well-rounded throughout. The inferior margin, on the contrary, was rough and studded with small ossified points, which projected into the ligament below.

The author assigns as the organ of reproduction in this case the periosteum of the old bone, notwithstanding it had also undergone some morbid alteration from the effects of the disease.—*Gaz. Med. de Paris, Sept. 28th, 1833, from Graefe und Walter's Journal.*

34. *Reduction of a Double Luxation of the Inferior Maxillary Bone, thirty-five days after the occurrence of the Accident, effected by a New Method of Treatment.* By Dr. STROMEYER.—The instrument invented by Dr. Stromeyer for this case, resembles very much a pair of strong steel forceps, the branches of which, instead of crossing each other as usual, are united at one end by means of a screw. This is so arranged, that whilst the ends containing the screw are made to approximate, by turning the latter, the other extremities will be separated from each other in proportion to the number of times the screw is turned. These terminate in two oval plates, (one for each branch,) covered with thick leather, which are intended to be placed upon the last molars of the two maxillary bones; when these are made to separate by means of the screw fixed in the other extremities, the bones of course will be forced asunder. The extremity of the screw is attached to the inferior branch of the forceps by means of another, which limits the degree of pressure exerted by the former; so that, should the force applied be found too great, it may be removed instantaneously and completely by merely turning the regulating screw. The following interesting observation will serve to explain the *modus operandi* of this very ingenious instrument.

Observation.—Amolie Elsner d'Elz, domestic, æt. 23, luxated the inferior maxillary bone on both sides in gaping. The accident occurred on the 7th of May, 1819. The physician of the family mistaking the nature of the case, treated her with opiates, frictions, sinapisms, &c. Another physician was called in, who recognised at once the nature of the accident, and attempted the reduction of the dislocation, in which operation he was assisted by three or four others, who had been called in to witness the case. Every attempt, however, failed to produce the desired effect, I now determined to make use of my instrument, with the design of breaking up any adhesions which the condyles might have formed with the surrounding parts, and of overcoming afterwards the resistance of the muscles by fatiguing them. Thirty-five days elapsed since the occurrence of the accident, and the inferior dental arch projected a little more than half an inch beyond the superior; they were, moreover, separated from each other at least an inch. The lips could, notwithstanding, be brought in contact with each other, and her voice had nearly acquired its original distinctness. Mastication alone was but imperfectly performed, the last molar teeth being the only ones engaged in it; deglutition remained unimpaired. The depression before the ears was well marked; and the swelling having entirely disappeared, the condyles could be distinctly felt in their new situation.

The instrument was introduced into the mouth, closed, and in such a manner that the oval plate of the upper branch rested behind the last molar teeth of the superior maxillary bone. The two branches were then separated, by turning the screw, at first rapidly, and then more gradually, in proportion as the resistance increased, resting a few seconds between each rotation of the screw until the pains produced had ceased. The last turn given the screw caused a peculiar cracking noise, as if the adhesions had suddenly given way. As the space between the two branches of the speculum, already equalled three-

quarters of an inch, the least turn of the screw produced the most violent pain; I therefore determined to stop the extension, leaving, however, the instrument in its present condition for some time. The whole time it was in operation was about one-quarter of an hour; I then closed it suddenly by unscrewing the regulating screw, and withdrew it from the mouth as quickly as possible. Dr. Wellhausen, who assisted me, now introduced his thumbs, previously enveloped in a piece of roller, in the mouth, and made use of the ordinary manœuvre for the reduction of this dislocation, whilst I pressed upon the heads of the condyles to favour their retrocession. The reduction was effected without being accompanied by the sudden or spasmodic closing of the maxillary bones, and owing to the relaxed condition of the muscles, the inferior dental arch still remained a little in advance of the superior; in the course of a few hours, however, a great amelioration in this respect took place, and a few days were sufficient to eradicate every vestige of deformity. The inferior dental arch regained its original position, and the patient recovered the entire use of the lower jaw. No relapse occurred.—*Gazette Médicale de Paris, Sept. 28th, 1833.*

35. *Operation for Strangulated Inguinal Hernia, performed on an Infant eight days old.*—An example of this is recorded by Dr. HEYFELDER, in the *Transactions Médicales*, for April, 1833. After the operation the child appeared relieved, but six days afterwards it was suddenly attacked with convulsions, which were succeeded by trismus, and the patient died. On examination, the intestines in the ileo-cæcal region were sphacelated and perforated. The strangulation had existed three days before the operation was performed, the delay during the last twenty-four hours having been caused by the parents.

36. *Ligature of the Subclavian Artery below the Clavicle.*—A young man received a sword-thrust through the folds of the axilla, in a duel. The hæmorrhage was checked by compression, and in eight days the wound was nearly healed; but now unfortunately the bleeding returned, and although restrained for the time broke out afresh at different intervals. Professor Blasius of Hallé determined therefore to tie the subclavian artery, below the clavicle. The operation was performed on the 20th day after the accident; and although no particular difficulty was experienced in any of the steps, the patient had been so exhausted by the repeated losses of blood, that he died on the 2d day after. On dissection, the axillary artery and vein were found uninjured; the source of the bleeding had been from the circumflexa humeri posterior, and circumflexa scapulæ, the wound having penetrated from behind, through the tendon of the latissimus dorsi, upwards and forwards. The subclavian artery, at the point of the ligature, was well secured.

Dr. B. very correctly condemns in severe terms the early treatment of this case. Why was the artery not laid bare at once, and a thread passed round it? No time should be lost upon such an occasion; the delay of even six, twelve or eighteen hours may be most injurious; for if an inflammatory action, nay an inflammatory tendency be established around the wounded vessel, the risk of secondary hæmorrhage is tenfold increased. Dr. B. was called one evening to a young man, who had wounded his hand deeply in the morning; a bungling surgeon, who had seen the patient then, had crammed compresses and other trash into and upon the wound; a certain degree of inflammation had thereby already commenced, when Dr. B. applied the ligature; on the 4th day, the vessel had ulcerated; the bleeding returned; and a second operation was necessary. But should the wound heal partially at first, and the hæmorrhage not recur, till the 16th, 18th, or 20th day after the accident, when suppuration had been established for some time, not only are the difficulties of securing the injured vessel greatly increased, but also the chances of ulceration of its coats at the site of the ligature and consequent bleeding. The parts are much changed in their tissue, and are matted together, so that it is often not easy to distinguish between them; and moreover the artery is so glued to its sheath, &c. that it is scarcely possible to

isolate it satisfactorily. Still with all these disadvantages, the tying of the artery is much safer than the employment of any other styptic remedies; our prognosis however cannot be so favourable, as it would have been, after an earlier operation.—*Rust's Magazine*.

37. *On Sanguineous Tumours of the Cranium*.—The most common and least dangerous sort of these bloody swellings is when the blood is effused between the aponeurosis of the occipito-frontalis muscle, and the common integuments.—They are very often observed on the heads of new-born infants, and are no doubt caused by the severe contusion of the cranium, during its expulsion through the pelvis. This is the “caput succedaneum” of some German authors. In general, it may be easily discussed under the use of resolvent applications.

The second variety of bloody tumours of the scalp, and which is usually caused by contusions or other external violence, is that which has been described by M. Zeller under the name of cephalæmatomé. The blood is diffused between the aponeurosis and pericranium. The German and Italian writers have often confounded this variety with the former;—it is only on this supposition, that we can account for their differences of opinion with respect to the danger or not of these bloody swellings, and to the treatment which they have recommended; some advising the knife to be used, others trusting to discutient lotions.

The fluctuation is not so distinct as in the first-mentioned kind, and the blood becomes diffused more readily, so that it does not generally present the appearance of a depression in the centre, and an elevated hardened border round; signs which have sometimes led surgeons to suppose that there was a depressed fracture of the bone, when the effects of the bruise were nothing but an ecchymosed subcutaneous swelling. In this sort the aponeurosis sometimes form a solid cyst round the extravasated blood. Whenever the pericranium becomes detached from the skull the injury assumes a more grave importance;—we cannot with certainty predict that the bone may not become ultimately necrosed. But this is rare, and authors have no doubt often committed the error of supposing that the blood was in contact with the bones, when the investing membrane of the latter was quite entire and firmly adhering.

M. Velpeau mentions a case of a child, only ten days old, being brought to him for a supposed hernia of the brain.

A soft fluctuating tumour covered the greater part of the left parietal, part of the temporal, and almost the whole of the occipital bone. The dispersion of this swelling was easily effected in the course of a few days. It is quite an unusual occurrence, that the pericranium is detached from the bone in new-born infants, however difficult the delivery may have been, and however large the quantity of blood effused. Sometimes, indeed, when a true encephalocele does exist, we meet with bloody swellings, which have their seat next to the bone, on others parts of the head;—such cases are very generally fatal.

The third species of swelling is situated deeper than either of the preceding two. Chelius, in his manual of Surgery, published in 1827 at Heidelberg, places it in the diploe of the bones; M. Velpeau thinks that it more frequently begins between the bone and the dura mater, although a case mentioned to him by M. Lauth is more favourable to the other opinion. A man received a blow with a cudgel on the parietal bone; but little notice was taken of it, and in the course of a few days he appeared to have quite recovered. Several months after severe pains were felt in the part diametrically opposite; (are we to understand the parietal bone of the other side?) and it was judged proper to trephine the bone there; but no correct information as to the true nature of the disease was obtained by the operation. After death, a fungoid mass was discovered, of the size of a large walnut, flattened, and, as it were, encysted in the diploe of the bone, where the blow had been received.

M. Velpeau has seen two cases in which blood was effused between the dura mater and bone during accouchement. It is very probable that the blood retained in this situation may undergo certain changes and ultimately give rise to some of the cranial fungoid tumours.—*Journal Hebdomadaire*.

38. *Case of Compound Fracture of the Thigh, in which Amputation was Performed.* By R. N. BURNARD.—The subject of this case was a boy, about 12 years of age, who, by a fall from a tree, had sustained a severe compound fracture of the right thigh, about one and a half or two inches below the trochanters. The accident had happened twenty days previous to his admission into the hospital on the 25th January, 1830, when Mr Burnard saw him for the first time. The whole of the leg at this time was in a state of mortification, the gastrocnemii muscles detached from their superior attachment, and the back of the knee-joint exposed; the fleshy part of the thigh below the fracture was in the same state of mortification, with the exception of a small portion on the inside, which alone connected the dead mass to the living. Above the fracture there was a small extension of mortification, but there appeared no disposition for it to spread higher, and nearly the whole of the parts affected could be included in the incisions for forming the flaps. It was immediately determined to amputate the limb at the hip-joint, which was accomplished as follows:—Mr. Burnard having no assistants excepting his native Doctors, commenced by cutting down on the artery immediately where it emerges, from beneath Poupert's ligament. Having secured this by a single ligature, the knife with one stroke was directed through the connecting part in the inside, by which the operator got rid of the embarrassment of the limb, and then grasping the upper portion of the bone, abducted it as strongly as he could with one hand, while with the other, a cat-line was carried along it into the joint and round the head of the bone. The dislocation was easily effected, and the attachment of the muscle severed by carrying the knife round close to the bone; and after its removal two flaps were formed by cutting outwards, and inwards from the original incision made to secure the artery, and as far as possible including all the parts affected with sphacelus or threatened with it. Four small arterial branches required ligatures, but the whole hæmorrhage did not exceed three or four ounces, and the flaps were brought together by three sutures, adhesive straps, compress and roller being afterwards applied. The operation and dressing occupied about 20 minutes; the patient bore it with great fortitude, and when returned to his bed appeared but little exhausted. On the evening of the 26th, symptoms of tetanus came on, and pursued the usual course to the destruction of the patient; on the morning of the 28th he expired.—*Trans. of Med. and Phys. Soc. Calcutta, Vol. VI.*

39. *Stricture of the Rectum treated by the Introduction of a Tent, by a New Process.* By M. TANCHOU.—That there exists great analogy between stercoral and urinary fistulæ is not disputed; the following observation is a new proof of the correctness of this opinion. It also shows that the efforts of nature alone, are sometimes adequate to a cure; and that the formation of an artificial anus should be attempted, in all cases of either complete obliteration of the rectum, or of contraction of this gut to such a degree, as to prevent the escape of fecal matter. It moreover proves, that the occurrence of a fistula, or the performance of this operation, are means by which the days of those affected with stricture of the rectum may at least be prolonged, though they may fail in producing a radical cure.

CASE.—*Stricture of the rectum; stercoral fistulæ caused by a gangrene of the breech; one of the fistulæ completely healed; a disposition to a complete cure brought about.*—Madame M. æt. 55, of a strong constitution naturally, and considerable embonpoint, was attacked in 1830 with a violent inflammation of the bowels. She was treated upon the antiphlogistic plan. During convalescence she indulged her appetite too freely, which brought on an attack of indigestion; in consequence of this her restoration to health was slow and imperfect, indeed it seems she never acquired her original sound constitution. In the beginning of 1831 she visited Angoulême, where she delivered herself up entirely to the dictates of her morbid and sensual appetite. In a short time she was seized with a diarrhœa, accompanied by colic and flatulency. This increased to such an extent that she had as many as forty or fifty evacuations during the twenty-four hours; to

this condition of things was soon added a constant tenesmus, which obliged her to remain almost the whole time upon the close-stool. These symptoms gradually abated, without her pursuing in fact, any method of treatment; that is to say the stools were less frequent, and occasionally she was even constipated, though when this was relieved she would be attacked with violent diarrhœa and severe colic. In this condition she set out on her return to Paris, where she arrived after an extremely fatiguing and hazardous journey in the month of April, 1832; I found her very much changed in appearance, she had completely lost her embonpoint, and was very pale. Her abdomen was also considerably swollen, and she suffered from the most violent colics accompanied with a constant desire to visit the close-stool. Her attempts to evacuate were either entirely nugatory, or followed by a discharge of slimy fœcal matter, or of an extremely fœtid fluid. She still refused, as formerly, to submit to any regular treatment, particularly to a rigid course of diet. Her symptoms still increasing in violence, I determined to examine the rectum, in doing which I discovered that the anterior portion of this gut, about three or four inches above the sphincter, had undergone considerable contraction; its posterior face appeared to be as yet in a healthy condition. I insisted anew upon her observance of a rigid diet, and prescribed the application of leeches to the breech, with the design of subduing the inflammation, so that a tent might be introduced; but my orders were but partially obeyed. MM. Roux and Majendie were now called in, both of whom confirmed my diagnosis, and recommended a strict attention to the treatment which I had prescribed. Notwithstanding all this, she persevered in indulging her appetite, and could not, or would not allow the tent to remain in the rectum but a few hours at a time, and occasionally passed whole days together without its being introduced at all. The disease still continued to increase, and the cavity of the gut became smaller and smaller. By degrees she became more and more feeble; emaciation increased rapidly; her complexion became straw-coloured; her abdomen remained swollen, and she evidently suffered from a retention of fœces. Enemata brought away nothing; and finally, the stricture of the rectum increased to such a degree that nothing but liquids could pass through it. She also suffered intensely from colics and tenesmus. Such was the condition of the patient in the month of January, 1833. In the month of June following, (all the above-mentioned symptoms having increased in violence,) there appeared on the right buttock a swelling, which in a short time acquired an immense size. It resembled indeed, very much, both in size and shape, a small wash-hand basin. It imparted to the touch a doughy feel, and was neither inflamed nor very sensible when pressed upon. At this period she had no fœcal evacuations at all. After a time a slight degree of redness was observed upon the surface of the tumour, together with a sensation resembling that produced by the pressure of a thin dough in the cavity of a sac, which indicated either the existence of deep-seated suppuration, or the effusion of a fluid. Positive fluctuation did not exist. The anxiety, fever, and state of desperation under which the patient at this time laboured; but more particularly the supposition that the tumour was formed by a mass of extravasated fœces, induced me to decide upon making an incision into it; accordingly one three inches in length, and corresponding in direction with the apex of the buttock, was made in its summit. This gave issue to a large quantity of very fœtid gas, fœcal matter, and a small quantity of pus; these were not encysted or collected in a mass, but seemed to be merely infiltrated. The patient was relieved, though the swelling was not sensibly diminished. On the third day after the operation, there appeared near the fold of the breech and thigh, a small gangrenous spot, which in a short time increased to such an extent, as almost to touch the incisions. Thinking it the better plan to lay open this mass, I continued the first incision downwards for about three inches. The whole was then lightly dressed, after having been previously washed with chloride of lime water. The discharges from the wound were composed of fœcal matter, mixed with pus, and a gangrenous sanies. In a few days a large portion of the interior of the buttock was attacked with gangrene, and a mass of sphacelated cellular tissue,

nearly equalling in size the two fists, presented itself between the lips of the wound. This was washed in the chlorine solution, and then dusted over with powdered tan-bark and quinine. The edges of the wound were dressed with strips of linen spread with storax. During this treatment, and without doubt by the efforts of nature alone, the gangrene ceased to progress; the margins of the eschar were detached; the inner surface of the buttock sloughed off, and there remained an ulcerated surface more than eight inches in diameter, and deep enough to lodge the doubled fist, which terminated above in a stercoral fistula large enough to allow the ready escape of the fecal matters. All the symptoms produced by the retention of the feces now ceased; the sleep became again tranquil; the appetite returned; soups and light articles of diet were easily evacuated; the fever diminished; the wound assumed a healthy appearance; granulations sprouted up from all sides; and on the 15th of August the sore had diminished at least a third; its bottom was nearly on a level with the surface of the skin; and to my great astonishment every thing indicated a speedy restoration to health.

About this time a small tumour made its appearance between the sphincter and coccyx, which soon opened; the orifice however was not sufficiently large to allow the feces to pass readily; I therefore enlarged it. The quantity of feces that were evacuated through the fistula, (nothing passed through the anus for two months before this time,) now began to diminish; the abdomen, which had returned nearly to its natural state, again became tense; the complexion, which had regained its clear and rosy tint, became again pallid; the colics were more frequent and violent, and she was at length obliged to keep her bed; in short, all the symptoms dependent upon a retention of feces reappeared. I now enlarged the opening in the last tumour an inch and a half, directing the incision along the coccyx, believing that a division of the sphincter would be attended by no beneficial result. This gave issue to a large quantity of fecal matter and pus, that had collected in this new situation. From this time forward the discharge from the original fistula daily diminished, until at length it ceased entirely, and the wound nearly healed. The injections, which formerly were discharged through several orifices, were now returned through the last incision alone. In a word, the original fistula closed, and the course of the feces seemed to approach the natural direction. The appetite, spirits, and embonpoint of the patient returned; she is also strong enough to walk in her garden, and every thing leads us to conclude, that although a perfect cure of all her complaints will not be effected, she will at least be left with merely the inconvenience of a stercoral fistula, which will not materially shorten her days. It may even be possible, after the complete cicatrization of the breech, to unite the anus to the remaining fistula, by dividing the barrier which separates the two cavities from each other, provided this barrier is not of too great an extent, and the point of communication between the fistula and cavity of the rectum is attainable with the point of the finger. The patient would then be able, after having suffered from gangrene of the breech, accompanied by several stercoral fistulæ, to evacuate her feces per vias naturales! The manner in which the tent was introduced into the rectum during the period that Madame M. consented to its application, merits perhaps a particular notice. For the first few days it was introduced in the form of a long conical cylinder, the point of which passed through the anus, in order that this point of the gut might suffer the least degree of pressure. But in a short time the rectum, from the combined influence of the disease, and a thickening of its parietes, becoming changed both in its shape and direction, it was found impossible to follow up its sinuosities except with a stilet. It occurred to me, that by mounting the tent in the following manner, its introduction into the stricture would be materially facilitated. I had made a little tube about an inch in length, the superior extremity of which terminated in a sort of neck; its inferior extremity was conical, and opened for the reception of a forked probe about six inches in length. The tent, (*mèche*,) supported in its middle by the neck of the tube, was so arranged as to cover the latter completely. In order to apply it, I first introduced a

long flexible probe into the rectum, and searched for the stricture. Having found it, I passed up the tent by shoving it along the probe, which being held in the stricture, and its lower extremity passed through the cavity of the cylinder, served as a conductor to the point diseased. By this means the tent was safely lodged beyond the point of stricture, without the operation being attended by fatigue to the patient, and without any portion of the intestine, except the point strictured, being subjected to any distention whatever. The stilet and conductor were then withdrawn, and the tent left in the stricture. The great advantage of this sort of *mèche* is, that it permits the escape of flatus which sometimes collects in large quantities in these cases, and which is prevented from passing out by the tents usually made use of, which block up completely the cavity of the stricture.—*Gaz. Méd. de Paris, Sept. 28th, 1833.*

MIDWIFERY.

40. *Malposition of the Spinal column rendering Delivery impossible—Cæsarean section—Death.*—Minot, a female, forty years of age, had been pregnant seven times within the last twelve years. Her fifth and sixth pregnancies terminated in abortion within the first three months. The rest had been all more or less difficult, and only one child had been born alive. The application of the forceps had been necessary in each labour; and at the last M. Capuron had been compelled to turn the child and perforate the base of the skull. On the 3d of February last, being pregnant for the eighth time, M. BELLO was called upon to see the woman, whom he found in the eighth month of pregnancy, having suffered for seventy-two hours from pains in the loins, exactly similar to those which preceded her other labours. When the patient was uncovered, M. Bello found the abdomen of the woman hanging down completely between the thighs, and covering the knees in such a manner, that the umbilicus, which formed the most inferior point of the tumour, touched the thighs when the patient was in the sitting posture. The anterior, or, rather, inferior, surface of the skin covering the abdomen, which was enormously distended, presented a very intense purple redness, with some crusts and slight ulcerations. At the lower part, on the left side, was noticed the trace of an old large cicatrix, and a little higher, near the median line, an actual loss of substance, of the size of a franc piece, produced by sloughing of the abdominal parietes. The bottom of the escharous ulcer was formed by a smooth, thin, transparent membrane, which was recognised to be the peritoneum. The termination of the former labours, the state of the abdominal parietes, and the extreme deviation of the uterus from its natural position, did not leave any hope of the next delivery being terminated without the assistance of art; and it was readily agreed by four physicians who were present, that something should be done before the labour-pains had further reduced the strength of the patient. The application of the forceps was impracticable, because every attempt made to return the uterus to its natural position, and bring the fœtus to the inlet of the pelvis, occasioned the most violent pains, whilst version was judged equally impossible, because the toucher could not discover the os uteri, which seemed more elevated than the fundus. Finally, symphyseotomy, which, besides being little applicable to the peculiar case in question, was excluded by the manner in which the abdomen covered the pelvic arch. The Cæsarean operation was therefore, decided on, and performed on the next day, 4th of February, 1833, by M. Baudelocque. A longitudinal incision of five inches in extent was made along the median line of the bottom of the tumour; the first stroke of the bistoury, although carried to the depth of a line, only exposed the uterus, and the operation was finished in sixteen minutes without the patient complaining of the least pain. The infant, extracted alive, was feeble, and imperfectly developed; it lived only for seventeen hours; a very small quantity of blood was lost during the operation, and a fainting fit by which it was succeeded, was attributed to maternal emotion. The patient was replaced in bed, and expired fifteen hours after the operation.

Autopsy eight hours after death.—The face and whole cutaneous surface of the body were remarkably pale; the cavity of the pelvis and a part of the abdomen were filled with clots of blood; the uterus, in a moderate state of contraction, also contained some clots. The dimensions of the pelvis were taken with accuracy. The antero-posterior diameter of the inlet was four inches eight lines; the transverse was four inches nine lines; the oblique diameters were four inches four lines. The outlet of the pelvis was not equally well formed; the antero-posterior diameter had four inches two lines; but the transverse diameter was contracted to two inches nine lines.

The disposition of the vertebral column explained perfectly the difficulties of the labour. From the occiput to the sacrum it was perfectly straight, without curve, and was united to the anterior part of the sacrum at a right angle, in such a way, that when the woman sat down, the base of sustentation was not formed by the sciatic tuberosities, but by the posterior surface of the sacrum; when she walked, the legs were slightly bent, the trunk was forcibly thrown forwards and to the left side, the shoulders and elbows were carried backwards, and the head was in a forced state of extension, and directed upwards, so that her acquaintances used to compare her manner of walking to that of a stag. This disposition of the vertebral column of necessity threw the abdomen forwards and downwards, and cut the plane of the inlet of the pelvis into two parts, the larger of which gave only a diameter of two and a half inches, and it was, in fact, this diameter which the fœtus would have had to traverse during labour.

It does not appear that this species of malformation has been before noticed by authors amongst the causes which may render labour either difficult or impossible. The woman attributed her deformity to a fall which she had at the age of ten years, and to a disease which seemed consequent on it; this affection was in all probability caries of the vertebræ, which had removed the body of one of the lumbar vertebræ, for on examination there were only found four on the anterior surface of the column, though the posterior surface presented five distinct lumbar spinous processes. The patient evidently died of hæmorrhage, the occurrence of which M. Bello accounts for, by saying the incision into the uterus was made at the point corresponding with the insertion of the placenta: hence, he concludes it will be proper under similar circumstances to apply the stethoscope before the operation, in order to discover the insertion of the placenta, which may thus be avoided.—*Trans. Méd. Sept. 1833.*

41. *New Method for the Division of the Pelvis in cases of Difficult Parturition.*—This operation, which consists in dividing the horizontal branch of the pubis, on both sides, above the obturator foramen, was originally conceived by Aiken, and first performed by Galbiati, a celebrated accoucheur of Naples, in March, 1832. The following detailed account of this operation, which we copy from the *Lancet*, is taken from *Il Filatre-sibezio*, 1833.

G. Negri, of Naples, of good health, and at present of sound constitution, was rachitic to such a degree, that her stature did not exceed two and a half feet: the lower extremities were extremely deformed, and the pelvis was so vitiated, that the promontory of the sacrum approached within an inch and a quarter of the pubis. She had been pregnant twice before this period, and succeeded in bringing on abortion in the early months; but having become pregnant again at the age of thirty, similar attempts to bring on abortion failed, and she entered the hospital, fully convinced of the impossibility of being delivered in the ordinary way. The necessity of an operation was at once visible, and the method of Dr. Galbiati discussed: new trials were made on the dead body, care having been previously taken to inject the arteries of the pelvis. The operation seemed easy of execution; no important parts, vessels, or nerves, were injured, and although the diameters of the pelvis were artificially reduced to those which the pelvis of the patient presented, the hand could be introduced, and a body as long as the head of a child extracted. A numerous consultation of the professors of the school of Naples was now held; the opinions were various; some rejected the proposed operation altogether. Others preferred the

Cæsarean section; but the greater part of the surgeons and accoucheurs present decided in favour of the new method, as soon as the first pains of labour should appear. On the 30th of March, at day-break, the pains came on: they continued increasing to the middle of the day, when the operation would have been performed, but the consent of the patient could not be obtained before six o'clock in the evening, when the uterine pains were rare and feeble. Before proceeding to the operation, M. Galbiati explained to those present, that when the antero-posterior diameter had one inch of extent, it was necessary to divide the pubis on one side only: that it required a still greater contraction of the inlet of the pelvis to render the double section indispensable, and that the case before them was of the first kind. Besides, as the inclination of the promontory of the sacrum to the left gave more space on the right side of the pelvis, it was proper to take advantage of that circumstance, and operate on the right side: finally, as the strength of the woman was not reduced, it would be right to permit the uterus to act for some time longer on the child's head.

The operation was commenced by a longitudinal incision of an inch and a half, which exposed the horizontal branch of the pubis, on the right side, as near as possible to the cotyloid cavity; the periosteum was detached by means of a concave scraper, and the bone divided; the ascending branch of the ischium was divided in the same manner, and the operation terminated by symphyseotomy: the operation lasted an hour and a quarter, but was performed without the occurrence of any accident: the patient did not seem to suffer much, and shortly after its termination the waters came away; the expulsion of the child was now left to nature. Four hours after the operation the patient was put into a warm-bath, during which the uterine contractions became more frequent and powerful: a moderate dose of *secale cornutum* was administered, but immediately rejected by vomiting. The patient passed a quiet night; in the morning the countenance was nearly natural, the pulse a little disturbed, tongue moist; abdomen free from pain, and uterus contracted upon the fœtus; the pains still remained feeble and rare; the finger could barely touch the head of the fœtus, extremely high in the pelvis. The warm-bath was repeated twice in the course of the day without any effect, the contractions of the uterus remaining in the same state; during the night they were equally feeble. On the second day the face was natural; pulse feverish; tongue red and dry; the belly a little swollen, and slightly painful; the head of the child could be felt more distinctly, but it had not at all descended into the cavity of the pelvis. In this state of things, a new consultation was held, and it was resolved to divide the horizontal branch of the pubis on the left side, and to have recourse either to version or the forceps, as no result could be expected from the feeble condition of the mother. The patient at first refused to consent to this new operation, but agreed to submit at four o'clock in the evening. The operation was performed in the same way as that already described, and the head of the child, which was not at all engaged, was seized with the forceps, and brought down into the cavity of the pelvis, where it was left: the finger ascertained that the cranium had given way; and the parietal bones, which were detached from the rest of the skull, were easily extracted. As the death of the fœtus was now certain, the remainder of the brain was evacuated, and the fœtus easily extracted by the hand; there were two circles of the umbilical cord attached round its neck; the skin was so little altered, as to give rise to the opinion that the child was alive on the evening before. Although the manœuvres necessary for the extraction of the child did not last more than half an hour, and were performed with the utmost delicacy and caution, the patient immediately fell into such a state of prostration, that she seemed on the point of expiring; her countenance was cadaverous, the pulse insensible, and the body covered with a cold sweat. The means proper to revive and support her were immediately employed, and she passed a pretty tranquil night; in the morning the tongue was red and dry, and the pulse had rallied a little, but the abdomen was painful and tympanitic; a very fetid sanies was discharged from the vagina, and the patient expired during the night.

Autopsy.—The external genital organs were livid, and the wounds gangrenous: the anterior portion of the vagina was healthy, but the posterior wall was completely gangrenous and sphacelated in the portion corresponding with the symphysis of the pubis; the cellular tissue surrounding the anterior part of the pelvis was infiltrated, and the divided bones were altered in their colour as in necrosis; the section of the bone was clearly made on the right side, but on the left the bone seemed rather fractured, and broken into scales. The symphysis of the pubis was not divided, but the bone had been cut a little to the right side. The peritoneum and abdominal viscera were perfectly healthy. The uterus, which was contracted, was healthy on its external surface, but internally livid; the sacro-iliac symphysis had not been injured.

42. *Cæsarean Operation.*—A case of this was communicated to Dr. Wise, by Dr. Leotard of Chandernagore, who assisted Dr. Tasse at the operation. The patient, aged twenty years, had a deformity of the pelvis, and after being in labour for four days, submitted to the Cæsarean operation, which was performed in the usual manner, and the dead child and placenta were removed; a bandage was then applied round the body, and the wound was left without any dressing for several hours, after which the edges of the incision were secured by the interrupted suture and adhesive plaster. The wound was healed in forty days.—*Transactions of the Medical and Physical Society of Calcutta, Vol. VI.*

43. *The Advantages of Turning the Fœtus by the Head rather than by the Feet.*—Up to the end of the 16th century, the only mode of turning ever practised was by bringing down the head first; and we find this conduct recommended, not only in such cases as are admitted at the present day to require artificial delivery, but even in common pelvic and feet presentations. Soon after the above-mentioned date, turning by the feet was first proposed, but it was not until the commencement of the 18th century that the practice was generally followed. One of the professors of the School of Strasburg resisted this innovation, strongly maintaining the superiority of the old regime; and his advice was approved of by many of the German practitioners. To justify this preference it was asserted that when the head presented first, the compression caused by the os uteri is not sufficient to injure the encephalic contents, and moreover, the communicant circulation between mother and child remains unobstructed; whereas in presentations of the lower extremities, the thoracic and abdominal viscera are exposed to a dangerous compression, and the fluids are driven back upon the head, thus causing frequently a fatal cerebral congestion. In confirmation of the truth of this statement, we are told that only one child in twenty delivered by the head is still-born; whereas, the proportion is one to five in feet presentations. In conclusion, it is alleged that whenever the fœtus is moveable within the uterus, it is quite as easy to effect the turning by the head as by the feet.

M. Dubois dissented from the above arguments. He contended that the described dangers of any compression on the abdomen and thorax were most unnecessarily exaggerated, and instanced two cases wherein the shoulder presented along with the head, and yet the children were delivered without any contusion of the thoracic and of the abdominal viscera.

The dread too of the retropulsion of the blood upon the head was an offspring of fancy rather than a result of experience, he did not agree with them in their belief that the os uteri exercised such a constrictive pressure as was alleged; the parts of the fœtus which have already escaped from the uterus are subjected to a less degree of pressure than those still contained within its cavity; and hence we can readily explain why the blood should be driven to and accumulated in the former. Do we not observe that when an arm is born first, the member frequently becomes much swollen? now this swelling arises from the pressure being less upon the arm than upon the rest of the body. True it may be, that in many children who die after feet presentation, visceral congestions are not unfrequently discovered; but the cause of these is the compression of

the umbilical cord, and not the retropulsion of the fluids which M. Flamant believed to take place.

The compression of the cord is a necessary danger attending all births by the feet, and indeed it constitutes a very serious objection to the process of turning; the child is very often asphyxiated, and in such a case we find upon dissection the same phenomena which are observed after drowning or hanging, viz. an apoplectic plethora within the head, great congestion in the veins of the cerebrum and other viscera,

The calculations which have been adduced to prove the greater safety of turning by the head than by the feet, are not strictly correct, as will appear from the following statement of M. Dubois.

In all such calculations, to ascertain the comparative mortality of the different modes of delivery, we must be careful to exclude from our tables all cases wherein the child has died before actual accouchement has commenced; or wherein the labour has been premature, and the child may be therefore not well capable of independent life. Now the new tables which have been recently formed at the Maternité of Paris, on these principles, shew, that from the 1st of June, 1829, to the 1st of June, 1833, 10724 children have been born at the hospital; of these 10262 were born by the head, 391 by the lower extremity, 59 by the trunk, and—30 by the face; of the 10262, 9867 were at the full period of gestation, and 395 were not. The 9867 may be reduced to 9837, because, in 30 of the cases the fœtus was known to be dead before delivery commenced, and the 395 premature cases may be reduced to 278; for in 83 the fœtus had been dead for some time, and in 34 it was too imperfectly developed for the maintenance of independent life.

Of the 9837 deliveries by the head at the full time, 191 were born dead; the proportion is therefore one in 51 or 52; and of the 278 prematurely born, 48 were born dead, or one in every 5 or 6. Of the 391 deliveries by the lower extremity 238 were at the full term, and 153 before the term; from the first number we must deduct 7, who were dead before labour began; and out of the remaining 231, 21 were born dead; a proportion of one to eleven. From the 153 we must deduct 63, in which the child had evidently died during pregnancy, and 30, in which it was too young for independent life; and out of the remaining 60, 10 were born dead; or one in six. From these calculations it appears among other results, that the fœtus at the full period can endure the "*fatigues of accouchement*" with much greater safety than when born at an earlier period, whether they are delivered by the head or not. M. Dubois draws our attention to the important difference in the results by the previous deduction of all the cases in which the fœtus either had been dead for some time before labour, or was incapable of life when delivered. Thus had we enumerated these cases among the mortality in the 10262 head presentations, we should have had 386 deaths, or one in 25; whereas we have fixed it above at one in 51: and in the 391 feet presentations the deaths would have amounted to 134, or nearly one in two instead of one in eleven. With regard to the comparative advantages in practice of turning by the head, M. D. admits that in some cases the operation is not only quite possible, [Mad. Lachapelle was wrong in denying this,] but also abundantly easy. He has himself performed it twice when the shoulder presented; but the operation is much more difficult than that of turning by the feet, and should the liquor amnii have copiously escaped, or should the uterus be firmly contracted around the child, the manœuvre is almost impracticable. In the 59 trunk presentations, two were delivered by means of turning by the head; in a third case the expulsion of a putrid fœtus took place by the shoulder; and in the remaining 56 the child was brought down by the feet. Out of the whole number 59, in 25 only did the child survive; but M. Dubois is of opinion that a still smaller number would have been saved had turning by the head been tried in all.—*Med. Chirurg. Rev. January, 1834.*

44. *Luxation of the Pubis during Delivery.*—A robust female, twenty-three years of age, pregnant with her first child, had a very difficult labour, the child

died during delivery. The last pain was so violent that the woman was convulsively raised from her bed. Nine days after her delivery, Dr. RIEKE was called to the patient, and found on examination a luxation of the pubis; the symphysis was broken, and the left side carried half an inch at least behind the right. The external genital parts and vagina, were much tumefied, nevertheless the urine and lochia flowed freely. The patient complained of pain in the region of the symphysis, and she could not walk. The patient having been placed on her back, Dr. Rieke applied his hands upon the crista ilea, and pushing backwards, endeavoured to separate them as far as possible, in order to restore the pubis to its natural situation; but he could not apply this force long in consequence of the violent pain it occasioned to the patient. Nevertheless, after several trials, this succeeded on the second day, whilst the patient held her legs flexed upon her thighs. From the moment that the luxation was reduced the patient could walk. To relieve the unsteady walking, and close the articulation, the patient was directed to wear for some time a bandage similar to a truss. On examination, it was found that the descending branches of the pubis formed an acute angle which contracted the inferior straight.—*Heidelberg Klinische Annalen*, B. vii. S. 3. 1831.

CHEMISTRY.

45. *New Method of Preparing Medicinal Prussic Acid*.—RICHARD LAMING, Esq. recommends the following formula for the preparation of medicinal prussic acid by the extemporaneous decomposition of cyanuret of potassium:—Take of Cyanuret of potassium, 22 grains; Tartaric acid crystals, 50 grains; Distilled water, 6 fluid drachms; Rectified spirit, 3 fluid drachms; in a phial capable of containing eleven or twelve fluid drachms. Dissolve the tartaric acid in the water and the spirit, previously mixed together, and suffered to become quite cold; then add the cyanuret of potassium, and immediately close the phial with a sound cork. After occasional agitation during ten minutes, secure the cork and set the phial aside, for the supertartrate of potass to precipitate—when the clear solution may be decanted for use.

The medicinal solution thus made, Mr. Laming states, is “always of the same strength; nor is it an insignificant recommendation, its being much less liable to spontaneous decomposition than the sorts made in any other way.

“There has been an impediment in the adoption of such a formula, in the delicacy of the cyanuret of potassium; no plan heretofore having been discovered for its formation in a state of purity. The few specimens of this salt which I have been able to collect, have all exhibited a variety of hues, depending on particular contaminations; and in some instances they were found to contain large quantities of carbonic acid. The prussic acid made with them was usually, in consequence, of a deep yellow colour; but at times it was obtained green, and brown, and blue.

“The accompanying cyanuret of potassium is pure, and I believe the first specimen ever obtained in a state of purity. By analysis I have found its composition to be—

Cyanogen	-	-	3.25	×	8	=	26
Potassium	-	-	5	×	8	=	40
			8.25				66.0

and that of anhydrous prussic acid being

Cyanogen	-	-	3.25	×	8	=	26
Hydrogen	-	-	.125	×	8	=	1
			3.375				27.0

“We have, of course, in every 66 grs. of cyanuret, an equivalent for 27 grains of absolute acid; and this number being allotted, in the new formula, to 27

drachms of liquid, every 60 minims of the medicinal prussic acid will contain precisely one grain of the strong medicine. The relative strengths afforded by the known formulas stand thus:—

		Number of Grains of absolute Prussic Acid in 60 Minims of Medicinal Solution.	
Plan by	Formula by	Real.	Estimated.
Scheele.	Scheele.	$1\frac{1}{2}$	8
Pharm. Dublin.	Pharm. Dublin.	1 or $1\frac{1}{4}$	$1\frac{1}{2}$
Gea Pessina.	Henri.	unknown.	20
Proust. (both ascribed to Vauquelin.)	Pharm. Gallica.	1 or about.	$1\frac{1}{2}$
Vauquelin & Gay Lussac.	Magendie.	7	7
	Robiquet.	20	20
New Plan.	New Formula.	1	1

“This table will explain the reason why one grain in a fluid drachm has been adopted for the new formula: in the first place, it is about the strength which experimentally results from the only process at present sanctioned by either of the British Pharmacopœias; it is also near to that of the medicinal acid usually called Vauquelin’s; and from Scheele’s it differs by about half a grain, on that side which will be a guarantee against a careless dispenser of prescriptions doing mischief, should he mistake the newly-introduced medicine for his. In addition to this, it has been thought to afford facilities for the correct estimation of a dose.”—*Lond. Med. Gaz. Sept. 1833.*

46. *Test for Hydrocyanic Acid, and Method of appreciating the Quantity.*—We are informed by Mr. JOHN T. BARRY, that the nitrate of silver, in common with other salts of that metal, is so extremely delicate a test of the presence of hydrocyanic acid, that its detection is not difficult in a drop of water containing far less than *the ten thousandth part of a grain* of that poisonous agent. For instance, if one minim of the dilute medicinal solution be mixed with a pint of water, its presence may be demonstrated in a single drop of the mixture. But what is of more consequence is, that although the mixture be contaminated with various organic substances, such as those contained in articles of diet, milk, coffee, tea, porter, wine and soups, so far as is yet known the test retains its sensibility unimpaired. Mr. Barry, however, thinks that this extreme sensibility, while it renders the evidence of the silver test conclusive as to the *absence* of prussic acid, will be of more limited service in establishing its *presence*, for, without adverting to the possibility of other volatile substances being hereafter discovered to have a similar effect on solution of silver, it is to be borne in mind that this reagent indicates the existence of prussic acid in some esculent substances where it had previously been found, as well as in some new ones. Upon this branch of the subject medical jurists will probably think it right to collect information.

The application of the solution of silver is simple. The suspected fluid is to be acidulated by the addition of acetic acid, but so as to redden litmus paper

in only the *slightest degree*. If excess of acid be already present, it is to be *not quite* neutralized by carbonate of soda. These precautions are adopted to retard the interference of ammonia or muriatic acid. Two or three drops, quite cold, are then put into a watch glass, and immediately covered by a plate of glass, whose under surface, to the breadth of a pea, is moistened with solution of nitrate of silver, formed by dissolving one grain lunar caustic in 100 grains distilled water:—

If the inverted drop of silver solution retain its transparency unaltered, the *absence* of prussic acid is established; for had it been present, the silver solution would in a few moments have become clouded by the formation of a *white* precipitate, an effect which, indeed, is almost instantaneous when the prussic acid is not excessively diluted. If, on the other hand, the precipitate appear, the conclusion must not be drawn, that it is *cyanuret* of silver, until identified as such by two properties:—first, its speedy *re-solubility*, as denoted by the clouded drop becoming again clear, when *placed over* a vessel of caustic ammonia, in which respect it differs from the silver compounds of iodine and bromine:—and secondly, in retaining *unchanged* its pure white colour after exposure a few minutes to the sun's rays, or for a longer time to day-light. As this property essentially distinguishes it from the compound of silver with chlorine, it is important to establish it by a separate experiment upon a somewhat larger portion of the precipitate, which should be obtained by candle-light, by successively placing the inverted drop of nitrate of silver over renewed portions of the liquid in a saucer, as soon as the precipitate separates into distinct curd-like particles, it is ready for exposure to the solar rays.

Another property which distinguishes the cyanide, (or cyanuret,) of silver from the chloride, is, that upon being ignited in an open short glass tube, the cyanogen burns with a flame of the usual colour, leaving the metal pure, if sufficiently heated,—a quality the more valuable as it furnishes an index to the *proportion* of prussic acid it represents, which upon ordinary occasions may be estimated as equal to one-fourth the weight of residual silver.

When, acting upon this principle, it is desirable to ascertain the *entire* quantity of prussic acid, it is to be obtained by slowly distilling over, in nearly filled close vessels, about an eighth of the acidulated mixture under examination; rectifying it; reacidulating by acetic acid; precipitating by *slight* excess of nitrate silver; washing with distilled water, only so long as the washings affect litmus paper; drying at 212° ; weighing:—and lastly, igniting and re-weighing.

The medicinal solution above referred to, (as to be diluted for experiment in the proportion of one drop to the pint of water,) contains, in round numbers, nearly a sixteenth of its own weight of anhydrous prussic acid, or rather less than four grains in the drachm, being the article, (commonly designated “of Scheele's strength,”) as manufactured by some respectable houses in London. We understand that Messrs. William Allen and Co., by means of silver as a reagent, have uniformly concentrated it to this degree since the year 1820, when Mr. Barry introduced the use of that metal to determine and regulate its proportion of absolute prussic acid by the formation of cyanuret of silver. The method being one which admits of extreme precision, will deserve the attention of the College of Physicians, if prussic acid be inserted in the next Pharmacopœia. It is to be recollected that this preparation, like those of alcohol or æther, is subject to variation, notwithstanding any superiority of formula, or care on the part of the operator. Hence the necessity of means for assaying the final product and for reducing it to a uniform standard. With regard to the employment of cyanuret of potassium for the occasional formation of hydrocyanic acid, it is a question which at least deserves very serious consideration. Its disposition to absorb atmospheric moisture, and always to become more or less converted into carbonate, while its cyanogen, (united to hydrogen,) to an uncertain extent is dissipated, especially when this beautiful salt is much disintegrated, constitute formidable difficulties. But a still greater objection will present itself at the counters of apothecaries and chemists where medicines are

made up, from the possibility of this intensely poisonous salt being sometimes mistaken for other substances, in the frequent extemporaneous production of prussic acid.—*The London and Edinburgh Philos. Mag. &c. February, 1834.*

47. *On Cusparia from Angustura Bark.*—M. SALADIN obtains *cusparia* from angustura bark by the following process: Digest seven parts of the bark in 20 parts of alcohol, of sp. gr. 0.795, without heat: let the spirit evaporate gradually at a very low temperature. After some days have elapsed, there will be observed very slight mammellated crystalline appearances, in a magma of colouring and extractive matter, &c. &c., and also deposited as acetates upon the upper part of the sides of the vessel. When carefully separated from the liquor, pressed and freed by a small quantity of water from the greater part of the foreign substances mixed with it, the crystalline form appears regular, though not very distinct.

By fresh treatment with alcohol, of sp. gr. 0.8349, and successive agitation with a little hydrate of lead freshly precipitated and æther, it separates, though with difficulty, from the fatty and colouring matters with which it is mixed; and it presents, even after some hours' exposure to a freezing mixture, acidulous crystals, united in concentric groups, the greater part of which are tetrahedrons and various modifications of this form.

These crystals dissolve in alcohol, and more rapidly when moist than after drying; the solution is bitter and slightly acrid: it does not act either as an acid or as a base. It dissolves readily in acids, and forms during their concentration, especially in acetic and muriatic acids, a white flaky deposit, which retains acid strongly even after a number of washings: it appears, however, to be merely a hydrate of cusparia.

It is insoluble in the volatile oils and æther, but dissolves in small quantity in water, according to its temperature: 1000 parts of water, at 55° Fahr., dissolve 5.45 parts; at 212°, 11.04 parts. Alcohol of 0.8356 at 60° dissolves 37–100dths of its weight.

Nitric and fluoric acid at common temperatures renders cusparia yellowish green; sulphuric acid turns it reddish brown: neither iodic nor muriatic acid produces any visible alteration: the salts and the protoxides of iron and tin, the acetate and subacetate of lead do not precipitate its solutions. These characters are sufficient to distinguish it from brucia; like brucia and salicine, however, it possesses the property of being reddened by pernitate of mercury.—This test will serve to detect the smallest admixture of salicine with sulphate of quina, even 1–743dth.

Tincture of galls precipitates cusparia abundantly both from water and alcohol: the alkalies dissolve it partially without altering it. Chlorine, iodine and bromine in the gaseous state colour it; the first of a straw yellow, and the two last brown. In the first case, the cusparia becomes more soluble in the state of a peculiar acid; the washings contained only traces of chlorine.

When heated to 130° Fahr. and gradually higher, cusparia first melts, and then loses 23.09 per cent. of its weight. It does not appear to suffer any alteration until it is heated to about 270° Fahr.; it then burns, without leaving any appreciable residue, and without subliming or phosphorescing: its vapour at a lower degree does not indicate azote as one of its elements; and by this it is also distinguished from brucia. The only circumstances which require notice in the angustura bark are, that it contains rather a large quantity of pectine and no copper.

Cusparia is not poisonous, even in large doses; its properties appear to approach those of quina, gentianine and salicine. When the watery and acid extract of the bark is treated with animal charcoal, alcohol, &c., there may be obtained by crystallization about 13–1000dths of the weight of the bark employed.—*Ibid, et Journ. de Chim. Méd. July, 1833.*

AMERICAN INTELLIGENCE.

Case of Adhesion of the Placenta to the Fundus of the Uterus, successfully treated by Ergot. By EDWARD WORRELL, M. D. Assistant Surgeon U. S. Army. [Communicated in a letter to the Editor.]—SIR—In your very valuable Journal I find many cases recorded of the effects of the *Secale cornutum*, or ergot, and as the following is one of rare occurrence and some practical importance, I take the liberty of forwarding it for your disposal.

Case.—I was called to visit a black girl who, I was informed, was in labour, but on arriving at the house was told “she had been delivered of her child three days before, but that the after-birth was still retained.” I found her with a countenance expressing much anxiety; severe pain in the region of the uterus; a hot, dry skin; and her pulse about 120 in a minute and very small. On raising the bed-clothes to introduce my hand for examination, there escaped the most disgusting stench I ever encountered. I then introduced my finger into the vagina, upon which she sprung to the head of the bed, exclaiming, “Oh, you will kill me.” I immediately withdrew my hand, and asked what was the matter? She then told me “that the nurse had felt her so much that she could not bear to be touched.” I explained the necessity which existed for an examination, and that it was impossible for me to render her any assistance unless she submitted. She then told me she would bear it. I again introduced my finger, and carried it to the os uteri along the cord, which I found so firmly contracted that I could scarcely introduce the end of my finger, and its edges quite firm, and yielding none to the pressure made upon it. I then held the finger of the right hand at the os uteri, and drew gently, with the left hand, the umbilical cord in order to ascertain where the adhesion existed by the course of the cord. This I found to be at the fundus, and that very firmly. The case to me was a novel one. I never had seen or read of a case having occurred, and the only light thrown upon the subject is a paragraph in Dewees’ System of Midwifery, where he says that he has never seen a case of adhesion of the placenta to the fundus of the uterus, and at the same time a contraction of the os uteri, but that *he would suppose* the *Secale cornutum* might be advantageously used. We know the powerful effects of this remedy on the fibres of the uterus—we know that it produces strong contractions—then the question arises, will the contraction of the longitudinal fibres overcome the force of the circular? if so, the os uteri must dilate—I believed it would, and consequently gave fifteen grains of the ergot as a dose. Its effects were powerful, and continued some time, but without producing any other effect. In half an hour I repeated the dose with the same result as the first, except that the contractions of the uterus were stronger. I repeated the third, fourth, and fifth time, with an interval of half an hour between each dose. Immediately after giving the fifth dose, making in all seventy-five grains, I had the pleasure to find the os uteri open, the adhesion give way, and the placenta delivered. The girl did well with the exception of a mild phlegmasia dolens, which yielded to simple remedies.

Fort Howard, Green Bay, Michigan Territory, December 28th, 1833.

On the Climate of Florida. By H. PERRINE, M. D.—I have just received the 25th No. of your Journal for November, 1833. Among the subjects most interesting to me, is the article under “American Intelligence,” headed “St. Augustine, *East Florida*, as a Resort for Invalids.” Dr. Bell has rendered a great service to truth and humanity in showing the variability of its climate. It is true, that it is not so variable as the south of France or Italy; that it is preferable to that of Charleston or New Orleans, but it does not still approximate to that of the torrid zone. In Campeche the lowest temperature in seven years has been 62°, and the highest 98°. Recollect that one occurred on the coldest night, or rather break of day in the coldest winter, and that the other was noted at the hottest, 1 o’clock in the afternoon of the hottest

summer. The upper part of Florida, or that within the range of the miscalled temperate, but really variable zone, has been politically divided into Eastern, Middle, and Western Florida. By far the most important portion of that Peninsula is unsurveyed, unsold, unpopulated, and consequently unknown. I am willing to let the eastern and middle sections of the upper division extend down to 28° , but all below I claim the right to baptise under the name of Southern or Tropical Florida. In my address to the "Intelligent Friends of the Union," published in October, 1832, I first called the attention of the public to the fact, that the climate of the tropics extends beyond its astronomical boundary several degrees north into this most interesting portion of our territory. Nature does not confine herself within the artificial lines of astronomers. It has long been known that degrees of latitude do not indicate degrees of temperature, and that still less dependence can be placed upon them in the western than in the eastern hemisphere. In America the temperate and the torrid zone of the books encroach upon each other, and an intermediate division might more naturally be traced under the title of the *tropicoid* zone. Why the term temperate should continue to be applied to the region of variable climates, is more easily explained than excused. It is however certain, that the epithet is more applicable to the uniform temperature of those districts included under the names of hot or tropical climates, or still more erroneously of the torrid zone. The facts are, that extreme heat is greater at the pole than at the equator, and that it does not depend on the distance or position of the sun, but on the time it remains above the horizon. It is nearer to us in winter than in summer; approximates to a perpendicular position more at noon than in the hotter hours afterwards; raises still nearer to our zenith in the pleasant month of June than in our scorching July or August, and then elevates the thermometer higher in Boston than in New Orleans. In using the possessive *our*, I of course speak of our broad and happy home, the United States. Were the surface of the globe a uniform level of land or water, the rule would be universal, that heat and cold exactly correspond with light and darkness. When the length of the day and of the night were equal, so would be the heat of the one and the cold of the other over all the earth. The heat accumulated during twelve hours of light, would be lost during twelve hours of darkness. Under actual formation the law is general, that the nearer we approach to the poles, the hotter is the hottest day of summer, and the colder is the coldest day of winter, and the nearer to the equator, vice versa. But strike out every thing theoretical in the foregoing lines, and let us return to the facts relative to the climate of the Peninsula of Florida. It will no doubt appear strange, that within a hundred and fifty miles of St. Augustine, we will not merely find a much greater uniformity of temperature, but also all the phenomena of a tropical climate; yet it is not less strange than true.

The other general characteristics of the tropics are a warm dry winter, a wet refreshing summer, a cooling breeze from the sea by day, a cooling breeze from the land by night, and a westwardly current of the atmosphere, as well as of the waters commonly called the trade wind. The great equatorial current of rotation to the west, is in the Newtonian philosophy, attributed to solar attraction, but like the tides, would doubtless occur if both sun and moon were stricken from the universe. Without going beyond the earth, its combined diurnal and annual motions are sufficient to account for the movements of the liquid and aerial fluids upon its surface: whatever be the theory adopted, we should *à priori*, infer that the westward winds and waves should be both stronger and steadier in proportion to their proximity to the equator. But the equatorial current of water, which, in the wide Pacific Ocean acquired sufficient strength to cut off New Holland from Asia, required so little force in its voyage across the Indian Ocean, that unable to cross tropical Africa, or even to wind round its northern border through the Red Sea, it was content to wear its way round southern Africa, scooping out its eastern shores up to the equatorial belt of the Atlantic Ocean. Reaccumulating strength in its natural route, it made a desperate attempt to force a passage through equatorial America, but became so

exhausted after reaching the Isthmus of Panama, that it suffered itself to be reflected northward between the West India Islands, which it had separated from the main land, and makes its hot appearance on our coasts under the name of the Gulf Stream, cooling, weakening, and widening on its sultry journey back to the eastern hemisphere. The equatorial current of air is as little conformable to the rules of general philosophy. It should be very strong and very steady at the equator, but it is neither strong nor steady nor directly westward there, nor within several degrees either north or south of that line. On the contrary, the wind is more strongly and steadily from the east in the latitudes of tropical Florida than within any portion of the torrid zone. For a confirmation of these facts, you can refer to a paper by Basil Hall, published in the *American Almanac or Repository of Useful Knowledge* for 1832. However incorrect may be the observations of this naval captain on land, we have no reason to question his testimony relative to the winds, which have carried him over the sea in every part of the world. The sea and land breeze of the tropics are also liable to accidents not foreseen in the books. In some districts, and at some seasons, the sea breeze will last all night, and the land breeze will endure all day. According to the position of the coast, they may combine with, be modified by, or entirely opposed to the trade wind; there may be no sea nor land breeze at all. The width or the elevation of the land, of course, influence these phenomena. In Yucatan the sea breeze rarely extends thirty miles in the interior. In the hottest dry months from February to June, the land breeze becomes what is here called warm south-easters, and endures sixteen, eighteen, or twenty-four hours; but the sea breeze compensates in force what it has lost in time. On the eastern coast the trade wind aids the sea and opposes the land wind, but as the peninsula is so very broad, it is cooled sufficiently in the night to overcome the impulse of the trade. Were there mountains in the centre of the peninsula, they would not merely oppose a mechanical resistance to the westwardly wind, but would vary still more the temperature of the atmosphere.

Returning to tropical Florida, it will be perceived that it enjoys a combination of advantages for uniformity of temperature that can rarely be equalled in the torrid zone itself. Its surface is narrow. It cannot hence accumulate much heat by night, or lose much heat by day compared with the temperature of the adjoining oceans. Its surface is level, and cannot hence experience those variations of temperature which are produced by hills or mountains.

It stretches to the south, and hence the trade wind passes at right angles across it. Even its inclination to the east is advantageous, a north wind will have to pass over a portion of the sea before touching it. A complete north west wind must also cross a part of the Mexican sea to reach the south western extremity of the peninsula. But above all it has a peculiar regulator of its temperature, hugging its eastern shore, and inclining a little to the west of north. The Gulf Stream freighted with the heat of the torrid zone rushes out between Yucatan and Cuba, runs to the east between Cuba and Florida, and sweeps round to the north between Florida and the Bahamas at the rate of five miles an hour, and with a steady temperature of eighty-five degrees. The steady trade wind crosses this steady hot river, imbibes its steady temperature, and steadily distributes it over the narrow and level surface of tropical Florida. I would not, however, have you infer, that southern Florida is a mere marsh, or a dead level, ready to be overflowed by the ocean. On the contrary, the only marshes level it can have, must be the summit level of the whole peninsula. The passage of the Gulf Stream to the north is alone an evidence of the superior elevation of the southern extremity, which is placed beyond a doubt by the river St. John's, taking its rise there, and after meandering several hundred miles to the north, finding an outlet into the sea beyond St. Augustine. The streams then which rise in the same summit level, and discharge directly in the western southern or eastern shore, must have a rapid descent in their channels favourable for mechanical power, or what is still more important in the dry warm winter of tropical climates for irrigation. Be that as it may, we have testimony of the healthiness of Cape Florida in its most unequivocal form. The family of J. Dubose,

consisting of eleven whites, and several negroes, has not had a case of sickness during the last seven years. The tenderest and most productive vegetables of the tropics are flourishing under his care, viz. the banana plant, and the cocoa palm, which are universally admitted to be the greatest blessings of God to man. The harbour at the cape is the first below St. Augustine, and is easily accessible, and a voyage to and from the northern states can be made with less risk and in less time. Admitting then that in southern Florida we have combined a warm dry winter, a cool refreshing summer, a breeze from the sea by day, and from the land by night, a perpetual westward wind, and uniformity of temperature even superior to the West Indies, humanity requires that it should be made an available resort for invalids as soon as possible. Our mineral springs are in general surrounded with all the conveniences and comforts of elegant life, although it was more costly and troublesome to collect them there than it will be at Cape Florida. An association might readily be formed with a capital of a hundred thousand dollars, which would furnish the buildings, gardens, and other conveniences requisite for the most squeamish visitor, and keep a packet running every month with passengers and effects to and from the north. The most luxurious accommodations could be profitably afforded at half the price paid in Havana. There is no necessity for detailing the disadvantages attending a sick American on the island of Cuba, which is the next nearest tropical territory. A part from the difference in language, laws, and customs, it is sufficient to name the horrible prejudice against consumptive patients, as the people are firmly persuaded that every disease with a cough is contagious. In Campeche so strong is the prejudice that the clothes of the patient is burnt, and the walls and floors of the rooms cleansed and white-washed.

Were it not for the disagreeable peculiarities of all Spanish countries I should long since have recommended Campeche as a winter resort to our consumptive patients. The cities inhabited by that race alone, are entirely divested of houses for accommodation to strangers. With a population of at least 20,000 inhabitants, there is not a single establishment entitled to the name of hotel, and the only two apologies for transient visitors are miserable dirty places, not fit for a sailor's boarding house in the north, one of which is kept by a French negro woman, and the other by an Italian sailor. Luckily the fine temperature of the climate enables one to dispense with bed and bedding, and a hammock slung up under a shed or any shelter from the dew is sufficient to pass the night. I am now *sitting* in one at 3 A. M. with the thermometer at 74°, which has not varied three degrees in the last three days and nights, while I observe in Dr. Bell's register that at St. Augustine during the same period there was a difference of 22° in the temperature of the days alone. With my self registering thermometer I have commenced noting the extremes of the present month of February, which I hope will arrive in time for your May No.

Consulate of the United States of America, Campeche, February 3d, 1834.

Sequel of Dr. Hulse's Case of Ununited Fracture of the Os Humeri, treated by the Injection of a Stimulating Fluid into the Wound.—Dr. HULSE, in a letter, dated U. S. Hospital, Pensacola, March 17th, 1834, informs us that Isaac Harding, the seaman, whose case is related in our last Number, p. 374, has been discharged from Hospital, and has returned to his duty.

Remarkable Location of Parturient Pains. By CHANDLER ROBBINS, M. D.—The lady who was the subject of this case usually enjoys good health. With the exception of occasional head-aches, she has seldom been ill, except at the periods of her confinement. She has had three children, at the birth of all which I have assisted her. The eldest is about seven years old, and the youngest about as many months. Her labours have been severe, and lasted from six to ten hours; but in no period of either have the pains been referred to the back or the groin, or the uterine region. They have all been confined to the muscle around, and particularly in front of the *femur*. They have been most severe about midway between the upper and lower extremity of this bone. Here she has solicited pressure, and here, at the commencement of each pain, her own hand has been

involuntarily placed. In every other character but their *location*, the pains have been such as we always find them; but to this location they have been confined—no sensation of pain having been at any time referred to the vicinity of the uterus.

This case may stand on record as undeniable. The lady is altogether above deception or pretence. Her moral sense is of the highest order; and being accustomed to the most refined society she would shrink from, rather than court, any notoriety on a subject of this nature.

It may not be amiss to add that the after-pains have also been confined to the same region. Dr. Dewees remarks in an article on after-pains, in that excellent compend, Dr. Hays's Cyclopedia, that he once knew after-pains located in the knee; and once, in the jaw.—*Boston Med. and Surg. Journ. March 10th, 1834.*

Notes of a case of Fistulous opening of the Stomach, successfully treated by Dr. J. H. Cook.—Some time in the month of February, 1832, Dr. Bardwell and myself were called to visit the widow D., aged thirty-nine years. We found her, as near as may be, in the following condition: A fistulous opening, immediately by the side of the umbilicus, into which a buck-shot might have been readily passed; on removing the bandage, a gill of bile was suddenly discharged; after which, a small quantity of a different (the gastric?) fluid, came slowly away. These discharges were attended with great pain, on account of their acrid quality. The whole surface of the abdomen was excoriated, inflamed and intolerably painful. We introduced a flexible catheter, its whole length, thirteen inches, before meeting with any resistance, when the extremity suddenly met with an obstacle. By pushing it against the resisting body, or even by slightly agitating the instrument, strong efforts to vomit were produced.

Withdrawing the catheter, we desired her to drink a glass of water; she did so, and in twenty seconds, the *whole* was discharged through the fistula, as we ascertained, by measuring it. The direction of the fistula was upward, and slightly inclining backwards, with about the same inclination to the right side. We came to the conclusion, that the opening within, was at, or about, the pyloric orifice of the stomach; and that the catheter entered the stomach, and pressed against its cardial portion. The patient even felt it there, and applied her hand externally over that part.

Treatment.—Taking a large beef's bladder, we cut it open, longitudinally, spread it well with adhesive plaster, and after washing the inflamed surface, and dressing it with basilicon spread on fine linen, we applied the bladder over the abdomen, and made an opening over the fistula, through which the matter might escape. We then applied a bandage and compress, and directed that it should be reappplied immediately after each discharge. We advised mucilaginous drinks, and a diet of rye-mush and molasses, and nourishing enemata. The patient was much emaciated for want of proper nourishment, as every thing passed off undigested through the fistula. No evacuation had taken place in the natural way, for ten days previous to our visit. The external irritation of the abdomen soon healed, and the bladder was then applied to the skin as a protection, and continued there with the happiest effect. The bandage was gradually tightened, and a compress of a cylindrical form was laid over the course of the fistulous canal. By these means our patient regularly, but slowly recovered. In a few days the alvine evacuations were restored to their natural outlet, and the discharges from the fistula began to decrease. In thirty days the opening was closed, and the fistula apparently obliterated. Several months have elapsed since that event, and she continues in excellent health.

All we could collect from her as to the history of her case, was this: Six months before, in one of the south-east counties of this State, she was attacked with constipation and violent pain at the pit of the stomach, which resisted every remedy, till the 19th day, when the fistula showed itself.—*Western Journ. of Med. and Phys. Sciences, January, 1834.*

Observations on the Pathology of Fever. By JOHN P. HARRISON, M.D.—Were we not well acquainted with the author of these observations, who we know to be an ardent votary of his profession, though rather distinguished for brilliancy of

imagination, than for talents for patient and careful investigation, we should hardly have suspected him of having indited this extraordinary rhapsody in sober earnestness. The want of precision and accuracy which usually distinguish the attacks upon the physiological doctrine eminently characterize the present one. Dr. Harrison makes sad confusion in the doctrines of the day. He appears to suppose that all the practitioners in France are Broussaisans! What will the Pinelians, the Pathological Anatomists, the Eclectics, &c. say to this? He assumes that according to the physiological doctrine, "fever is *nothing more* than gastro-enterite!" He charges the disciples of this doctrine with "having drawn from the magazine of fancy for a theory of fever," and then triumphantly asks, "will the corruscations of a fervid imagination eclipse the sober splendour and guiding radiance of a just experience?" (!) He informs us that "the disciples of Broussais in France, differ on the exact site of the inflammation in the intestinal tube. Louis, in his work entitled *Recherches Anatomiques, Pathologiques et Therapeutiques sur la maladie connue sous le nom gastro-enterite*, &c. says, that in every case of fever, the elliptical plates of the bowels are the seat of lesion. 'De toutes ces lesions une seule étant constante, ayant lieu chez tous les sujets, je veux parler de l'alteration de plaques elliptiques de l'intestin grêle, &c.'*" Others assert, that the glands of Peyer and Brunner are the seat of the lesion, whilst some state that fever is altogether dependent on follicular ulceration." If M. Louis will not admit the accuracy of the anatomical distinctions pointed out in this quotation, he will at least be somewhat surprised at being classed among the disciples of Broussais. Had Dr. Harrison taken the trouble to ascertain with precision, what are the glands of Peyer and Brunner, the elliptical plates of Louis, the mucous follicles of the intestines, he might have been led to suspect that this argument, which he appears to think is destined to give the *coup de grace* to the physiological doctrine, is not very overwhelming. Indeed, it will be somewhat ludicrous if it should turn out as we shrewdly suspect it may, that the elliptical plates of Louis consist of the glands of Peyer in a state of engorgement and ulceration, and that Peyer's glands are nothing more than mucous follicles, the follicules agminées of the French pathologists. Were Dr. Harrison an obscure practitioner, or had his observations been issued as an ephemeral pamphlet, and thus likely to have but a limited circulation, we should have passed them over unnoticed, as we have many other similar attacks upon the physiological doctrine. But Dr. Harrison is one of the medical magnates of the west; his paper has had currency given to it, by its insertion in one of the most respectable journals in this country, (the *Baltimore Medical and Surgical Journal*, No. 2,) and we should therefore be recreant to our trust were we to allow it to pass without comment, calculated as we conceive it to be, neither to inculcate correct information at home, nor elevate the character of the profession abroad.

Professor Dunglison's Address delivered to the Graduates of Medicine at the Commencement, March 19th, 1834.—This is an interesting exposition and criticism of the opinion of Lamarck, who maintains, that the habits of an animal are not dependent upon its organization; but on the contrary, its habits, mode of life, and those of its ancestors, have, in the succession of ages, determined the form of its body, the number and condition of its organs, and the functions and faculties it enjoys. This able address has been published by the graduates and students.

The Value of a great Medical Reputation, with Suggestions for its Attainment; a Lecture, Introductory to the Summer Course of the Medical Institute. By J. K. MITCHELL, M. D. Lecturer on Chemistry. An interesting subject well treated.

University of Pennsylvania.—The number of students in this institution during the session 1833-4, was 860; of which, 431 were medical students.

Medical Department of the University of Maryland.—The number of students, exclusive of graduates of other schools and officers of the army and navy, was 143.

* Paris, 1829, p, 449, tom. 1.

QUARTERLY MEDICAL ADVERTISER.

IN consequence of the extended circulation of the AMERICAN JOURNAL OF THE MEDICAL SCIENCES, the Proprietors intend, in compliance with the wishes of many of their Friends, to affix to each No. a Sheet of Advertisements. All Booksellers, Medical Gentlemen, and others desirous of taking advantage of this mode of announcement, will please address their Advertisements to CAREY, LEA & BLANCHARD, Philadelphia, by the 10th day of the month preceding that of the publication of the Journal, viz. on 10th July, 10th October, 10th January, and 10th April.

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Philadelphia, January 20, 1830.

UNIVERSITY OF PENNSYLVANIA.

At a Commencement held publicly in the Musical Fund Hall, Locust street, March 27th, 1834, the Degree of Doctor of Medicine was conferred upon the following gentlemen:—

NAMES.	RESIDENCE.	ESSAY.
Armstrong, Ralph C.	Georgia,	Fever and its Treatment.
Allen, Samuel A.	Virginia,	Scarlatina.
Abbott, Thomas H.	S. Carolina,	Bilious Worm Fever.
Anderson, Richard	Virginia,	Gonorrhœa.
Alexander, John Thomas	Louisiana,	Capillary Circulation.
Arrott, Colin	Philadelphia,	Injuries of Head.
Armistead, William A.	N. Carolina,	Intermittent Fever.
Bouchelle, Robert M.	N. Carolina,	Pneumonia.
Bond, John W.	N. Carolina,	Hepatitis.
Booker, Shields	S. Carolina,	Digestion.
Binford, Henry A.	Alabama,	Remittent Fever.
Baldwin, Isaac H.	Virginia,	Organic Force.
Beekman, William F.	New York,	Strictures of Urethra.
Balfour, William T.	Virginia,	Strictures of Urethra.
Bellamy, Samuel C.	N. Carolina,	Scarlatina.
Boyd, John	Pennsylvania,	Hydrothorax.
Boyer, Conrad R.	Philadelphia,	Digitalis Purpurea.
Bower, William H.	Virginia,	Coxalgia.
Bryan, James	Philadelphia,	Epidemics.
Buchanan, Archibald H.	Tennessee,	Mental Derangement.
Baugh, John M.	Virginia,	Scarlatina.
Crump, George	Virginia,	Hydrops.
Camm, Edward	Virginia,	Intermittent Fever.
Chambers, Benjamin F.	S. Carolina,	Vermes.
Colhoun, John B.	Philadelphia,	Ulceration.
Coleman, Richard	N. Carolina,	Acute Hepatitis.
Chewning, Albert G.	Virginia,	Acute Hepatitis.
Cotten, John A.	N. Carolina,	Catamenia.
Conover, William J.	New Jersey,	Fever.
Christian, Andrew H.	Virginia,	Scarlatina.
Cross, Richard	Virginia,	Conception.
Coate, Daniel	Upper Canada,	Nephritis.

Dossey, Alonzo B. C.	S. Carolina,	Cold.
Drake, Joseph A.	N. Carolina,	Dysentery.
Denig, George W.	Pennsylvania,	Scarlatina.
Dulaney, William J.	Virginia,	Scarlatina.
Davis, William	Virginia,	Laryngitis.
Ealy, Elijah	Pennsylvania,	Fungus Hæmatodes.
Ely, Henry P.	Pennsylvania,	Intermittent Fever.
Egbert, Daniel	New Jersey,	Fungus Hæmatodes.
Finley, Clement A.	Ohio,	Dysentery.
Fowler, Newton	S. Carolina,	Ascaris Lumbricoides.
Frayser, John R.	Virginia,	Intestinal Worms.
Franklin, James E.	Pennsylvania,	Moveable Cartilages of Knee Joint.
Germany, William	Georgia,	Hypertrophy of Heart.
Gregg, David R.	S. Carolina,	Tetanus.
Graham, Calvin	Virginia,	Sympathy.
Grattan, John	Virginia,	Bilious Colic.
Gordon, Benjamin W.	N. Carolina,	Variola.
Gilpin, J. Bernard Jr.	Nova Scotia,	Old Age.
Gilliam, John R.	N. Carolina,	Small Pox.
Gaskell, Isaac P.	Philadelphia,	Apoplexy.
Godon, Victor L.	Philadelphia,	Iodine.
Harrison, Thomas A.	Virginia,	Cynanche Trachealis.
Hambleton, Alexander	Maryland,	Hysteria.
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Helm, William D.	Kentucky,	Delirium Tremens.
Hope, Thomas M.	Virginia,	Remittent Fever.
Hamilton, Charles C.	Nova Scotia,	Acute Peritonitis.
Henry, William	Pennsylvania,	Cholera Infantum.
Horlbeck, Peter	S. Carolina,	Bilious Fever.
Johnson, Peter T.	Virginia,	Traumatic Hæmorrhage.
Johnston, Madison	S. Carolina,	Inguinal Hernia.
Jones, James S.	Georgia,	Acute Gastritis.
Irvine, James F.	Pennsylvania,	Diabetes.
Kemp, William M.	Maryland,	Peculiarities of Fœtus.
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Kerr, William	Pennsylvania,	Hæmoptysis.
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M'Cantz, Robert James P.	S. Carolina,	Typhus Fever.
Neves, Albert G.	Virginia,	Pathology of Dropsy.
Norcom, Benjamin R.	N. Carolina,	Nitrate of Silver.
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Powell, Francis W.	Virginia,	Scarlatina.
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Powell, Lemuel B.	N. Carolina,	Pathology of Intermittent Fever.
Prince, Abner	Delaware,	Acute Hepatitis.
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Tennent, Henry	Delaware,	Intermittent Fever.
Taylor, Isaac E.	New York,	Hæmoptysis.
Turnipseed, Zechariah	S. Carolina,	Exercise.
Taliaferro, William Jr.	Virginia,	Scarlatina.
Turner, Pitticus	Virginia,	Scarlatina.
Thomas, George W.	Georgia,	Scarlet Fever.
Wingfield, James N.	Georgia,	Scarlatina.

Woodworth, Robert	New York,	Iodine.
Wickes, Stephen	New York,	Spontaneous Hæmorrhage.
Wall, Richard Z. R.	N. Carolina,	Emetics.
Watson, Beverley O.	Tennessee,	Acute Gastritis.
Wildman, Elias	Pennsylvania,	Intermittent Fever.
Wright, David M.	N. Carolina,	Revulsives.
Woolverton, Jonathan	Upper Canada,	Ophthalmia.
Watson, Edwin	Virginia,	Puerperal Convulsions.
Wade, Elbert C.	Virginia,	Catamenia.

At the preceding Commencement, held July 15th, 1833, the Degree of Doctor of Medicine was conferred upon

James L. Bunch,	N. Carolina,	Ascites.
John Carter,	Virginia,	Cynanche Trachealis.
James G. Turpin,	Virginia,	Gun-shot Wounds.
W. E. HORNER, M. D.		
<i>Dean of the Medical Faculty.</i>		

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TO READERS AND CORRESPONDENTS.

Communications have been received from Drs. BARTON, HEUSTIS, VON DEM BUSCH, EVE, FOSGATE, PERRINE, CHARLTON, RAMSAY, and C. A. LEE.

The following works have been received:—

Transactions of the Medical Society of the State of New York. Vol. II. Part I. Albany, 1834. (From the society.)

An Account of Jane C. Rider, the Springfield Somnambulist: the Substance of which was Delivered as a Lecture before the Springfield Lyceum, January 22d, 1834. By L. W. BELDEN, M. D. Springfield, 1834. (From the author.)

Jahres-Bericht über das Clinische Chirurgisch-Augenärztliche Institut der Universität zu Berlin, abgestattet vom Director der genannten Anstalt Dr. CARL FERDINAND VON GRAEFE. Berlin, 1832. (From Dr. Von dem Busch.)

Die Behandlung der Asiatischen Cholera durch Anwendung der Kättle. Von Dr. JOHANN LUDWIG CASPER. Berlin, 1832. (From Dr. Von dem Busch.)

Sul Commercio Sanguigno tra la Madre e il feto Lezione di TOMMASO BIANCINI. Pisa, 1833. (From Professor Geddings.)

Medicinalbericht des königl. preuss. Medicinal-Collegiums der Provinz Sachsen für das Jahr 1830, Zus-ammengestellt von Dr. AUGUST ANDREAE, königl. Medicinalrathe und Lehrer an der Med Chir. Lehranstalt zu Magdeburg. Magdeburg, 1831. (From Dr. Von dem Busch of Bremen.)

Die Behandlung der Cholera in ihren verschiedenen Perioden und Graden von Dr. ERNST BARCHEWITZ. Danzig, 1831. (From Dr. Von dem Busch.)

Mittherlungen über die Asiatische Cholera. Von C. P. HOLSCHER, M. D. Hanover, 1831. (From Dr. Von dem Busch.)

Skizzen und Bemerkungen von einer Reise und dissen Umgegend im August und Sept. 1831, im Auftrage der königl. hanov. Immediat-Commission gegen die Cholera unternommen vom Dr. LOUIS STROMEYER. Hanover, 1832. (From Dr. Von dem Busch.)

Letter to the Physicians of France on Homæopathy. By the COUNT DES GUIDI, M. D. &c. Translated from the French, by WALTER CHANNING, M. D. New York, 1834. (From the translator.)

Topographical Description and Historical Sketch of Plainfield, in Hampshire County, Massachusetts, May, 1834. By JACOB PORTER. Greenfield, 1834. (From the author.)

Address to the Horticultural Society of Maryland. By JOHN H. B. LATROBE. May 15th, 1834. (From Dr. J. C. Cohen.)

First and Second Annual Reports of the Fellenberg Academy. Greenfield, 1834. (From Jacob Porter, Esq.)

Catalogue of the Trustees, Faculty, and Students of the Medical College of the State of South Carolina. Charleston, S. C. (From Professor Frost.)

Chemistry, Meteorology, and the Function of Digestion, considered with reference to Natural Theology. By WILLIAM PROUT, M. D., F. R. S., Fellow of the Royal College of Physicians. Philadelphia, Carey, Lea & Blanchard, 1834. (From the publishers.)

Essays on some of the most important Articles of the *Materia Medica*, comprising a full account of all the New Proximate Principles, and the Popular Medicines lately introduced in Practice, detailing the Formulas for their Preparation, their Habitudes and Peculiarities, Doses and Modes of Administration; with Remarks on the most eligible Form of their Exhibition: to which is added a Catalogue of Medicines, Surgical Instruments, &c. &c. adapted for a Physician at the outset of his Practice, with the Doses and Effects attached to each Medicine, &c. &c. By G. W. CARPENTER. Second edition, revised and enlarged. Philadelphia, 1834. (From the author.)

A Discourse on Quackery, read before the Massachusetts Medical Society at their Annual Meeting, June 4th, 1834. By ZADOK HOWE, M. D. M. M. S. S. Boston, 1834. (From the author.)

An Address delivered to the Graduates of Washington Medical College, Baltimore, at the Annual Commencement, on Monday, March 17th, 1834. By SAMUEL ANNAN, M. D. Professor of Anatomy and Physiology. Baltimore, 1834. (From the author.)

Archives Générales de Médecine, for September, October, November, and December, 1833, and January, 1834. (In exchange.)

Révue Médicale. for September, October, November, and December, 1832, and January, 1834. (In exchange.)

Annales de la Médecine Physiologique, for June, July, August, September, October, November, and December, 1833, and January, 1834. (In exchange.)

Transactions Médicales. Journal de Médecine Pratique et de Litterature Médicales, for September, October, November, and December, 1833. (In exchange.)

Journal Universel et Hebdomadaire de Médecine et de Chirurgie Pratiques, for October, November, and December, 1833. (In exchange.)

Journal Hebdomadaire des Progres des Sciences Medicales, for January and February, 1834. (In exchange.)

Journal des Connaissances Medico-Chirurgicales, for October, November, December, 1833, and January, February, and March, 1834. (In exchange.)

Journal de Chimie Médicale, de Pharmacie et de Toxicologie, Rédigé par les *Members de la Société de Chimie Médicale*, for October, November, and December, 1833, January, February, 1834. (In exchange.)

Gazette Médicale de Paris, for October, November, December, 1833, and January, February, March, 1834. (In exchange.)

La Lancette Francaise, Gazette des Hôpitaux, Civils et Militaires. Tom. VII. Nos. 122 to 160. Tom. VIII. No. 1 to 30, except No. 4, 5, 6, 7. (In exchange.)

Journal de Pharmacie, for October and November, 1833. (In exchange.)

London Medical Gazette, for March, April, and May, 1834. (In exchange.)

The Edinburgh Medical and Surgical Journal, for April, 1834. (In exchange.)

The Medico-Chirurgical Review, for April, 1834. (In exchange.)

The London Medical and Surgical Journal, for January, February, and March, 1834. (In exchange.)

Baltimore Medical and Surgical Journal and Review, for April and July, 1834 (In exchange.)

Transylvania Journal of Medicine and the Associate Sciences, for January, February, and March, 1834. (In exchange.)

The Medical Magazine, for April, May, and June, 1834. (In exchange.)

Boston Medical and Surgical Journal, Vol. X. No. 10. (In exchange.)

The Western Journal of the Medical and Physical Sciences, April, 1834. (In exchange.)

The Western Medical Gazette, April, 1834. (In exchange.)

Authors of new medical books, desirous of having them reviewed or noticed in this Journal at the earliest opportunity, are invited to transmit to the *Editor* a copy as soon after publication as convenient, when they will receive prompt attention. Under ordinary circumstances, very considerable delay is caused by the circuitous routes through which they are received.

Papers intended for publication, should be sent, *free of expense*, as early after the appearance of the Journal as possible, in order to be in time for the ensuing number. Such communications should be addressed to "CAREY, LEA & BLANCHARD, Philadelphia, for the Editor of the American Journal of the Medical Sciences."

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Embryology, or Human Ovology, containing the Descriptive and Iconographic History of the Human Ovum. By Alf. A. L. M. Velpeau, &c. &c. Graphic Illustrations of Abortion and the Diseases of Menstruation. Consisting of twelve plates from drawings engraved on stone, and coloured by Mr. J. Perry, and two copperplates from the Philosophical Transac-

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XVI. Transactions of the Medical Society of the State of New York. Vol. II. Part I. To be continued annually. Albany, 1834. 8vo. pp. 176	442
XVII. An Account of Jane C. Rider, the Springfield Somnambulist: the Substance of which was Delivered as a Lecture before the Springfield Lyceum. By L. W. Belden, M. D. Springfield, 1834. pp. 134. 12mo.	445
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THE
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MEDICAL SCIENCES.

ART. I. *Remarks on Tic Douloureux; with Cases.* By N. CHAPMAN, M. D. Professor of the Institutes and Practice of Physic and Clinical Practice in the University of Pennsylvania.

THIS is the earliest of the titles conferred on a nervous affection of a peculiar nature, which seems to have attracted attention only in very modern times. It is true, that to so remote a date as that of the Arabian writers of the eleventh century, the recognition of the disease is by some assigned, while others pretend more distinctly to find it in the works of LUDWIG and DEGENER, printed in 1673 and 1724. Of the precise claims of these authorities to priority in this respect, having had no opportunity of consulting them, I am unable to determine: but they are slenderly urged, and probably rest only on slight hints, or rude sketches of some nervous affection, which by a too liberal construction, are made to apply to the one now under review.

It is commonly conceded, that the merit of first noticing it, is due to M. ANDRÉ of France, by whom some account of it was published about the middle of the last century.* That however it previously existed, there can be no doubt, and among other evidence to this purport, which has been appealed to, is the statement of a case treated by the celebrated LOCKE, the metaphysician, who in early life studied and occasionally practised physic.

The notion entertained at present by many, of its being a new

* 1756.

disease, may have arisen from the want formerly, of careful or exact observation, so that it was confounded with some of the varieties of rheumatism or gout, or tooth-ache, or *clavus hystericus*, or inflammation of the lining membrane of the *antrum maxillare*, which, with other affections it simulates, and indeed, does exhibit itself under these several guises. Yet it cannot be denied, that diseases are newly developed, or become more prevalent at certain epochs—and perhaps in a greater sensibility of the nervous system from the higher refinements of recent times, excited by other and more specific causes hereafter to be enumerated, this particular affection has increased, as is supposed.

Twenty years* after the publication of André to which I have referred, a fuller and more accurate history of the disease was given by FOTHERGILL, to which he affixed the name of *Faciei Morbus Nervorum Excrucians*, and subsequently much may be found concerning it, either in distinct treatises, or in reports of cases, throughout the periodical journals.

Neuralgia, the title bestowed on the affection by CHAUSSIER, is now most commonly adopted. But it, which strictly means nerve-ache, is not sufficiently distinctive, since there are various other painful nervous irritations comprehended under it, differing materially from this one. The term too, has been absurdly extended by some recent writers, to affections in which the incident of pain is wanting—and indeed, so vague has become the use of it, that we hear it in common parlance, at least, appropriated to whatever is not exactly understood in the disorders of the nervous system. Taking neuralgia as a generic title, we shall still require an epithet to denote the peculiarity of this variety of disease, and the compound *TIC DOULOUREUX* does it very happily, indicating as well the pain, as the kind of it, which latter is most truly its pathognomonic symptom.† The appellation it received from Fothergill is no less objectionable, as it is expressive only of its location in the nerves of the face, to which it is not by any means restricted. Contrary to former views, it is of late irrefragably established, that though most frequently met with in the three great divi-

* 1776.

† Of the origin of the term *tic* we are not quite certain. It is most probably an *onomatopy*, or sound denoting the action it imports. Thus, we say the *tick* of a watch, as expressing precisely the character of the stroke, and it may, for the same reason be conjectured, that the name *tick* is given to an insect, the bite of which is singularly pungent and vibratory. Hence then, by analogy, the application of the term to this nervous affection, it being, as we shall presently see, characterized by a similar painful sensation.

sions of the fifth and in the facial portion of the seventh pair of nerves, there is no one, whether cerebral, spinal, or ganglionic, entirely exempt from its attacks. Nor is it less true, that originating in any one of the centres of the nervous system, it may be transmitted through a nerve to its ultimate distribution, or conversely, arising at its extremity, be reflected back on its centre. Existing in either of these modes, the disease presents its simplest form: but it sometimes entangles other nerves of the same, or those belonging to a different class, and then of course the case has a far more complex aspect.

By reason of these circumstances the disease is considerably diversified, and it receives further modifications from the tissue or organ in which it may be seated, as well as the variations of its stages. To delineate it in each of its presentations, would occupy a larger space than I can with any propriety appropriate, and hence I must be content with a general sketch.

Neuralgia, the title which in conformity to established usage I am compelled to adopt, may come on suddenly and without any premonition. But it usually is preceded by some considerable disturbance, and especially of the stomach and collatitious organs, amounting occasionally to confirmed dyspepsia—while in other instances, uterine, arthritic, or other derangement and its consequences are more conspicuously displayed, and such condition of impaired health will endure for a great length of time before an attack. Neuralgia in the commencement is decidedly paroxysmal, becoming less so in its chronic state of long duration, and has been repeatedly seen to observe with exactness in its returns the law of periodicity, so far imitative of intermittents in their several types.

As immediately precursory of an actual aggression in this shape, some sense of chilliness, with slight disorder of stomach, and palor of skin are often to be noticed, or without such marked affections, a general uneasiness is experienced—and I have known it to be preceded for months by a slight thrill or creeping sensation, like formication, or the aura epileptica, passing with great rapidity in the direction of a nerve and its ramifications. Yet in as many cases preliminary indications are wanting, and the paroxysm is ushered in by an ache in the part, soon aggravated to intense poignant, darting pain from the incipient point along the nerve and its distributions.

The direction of the pain is influenced by the course of the nerve affected. It may be seated in the second branch of the fifth pair or in the superior maxillary nerve, and here it will be found over the cheek bone, just beneath the orbit of the eye, or in the alæ of the nose,

upper lip, gums and teeth. Displayed in the forehead, temple, inner canthus of the eye or the globe itself, the ophthalmic branch of the fifth pair is affected, and when there is a copious effusion of tears, which sometimes happens, it is not improbable it arises from a twig of the ophthalmic, which goes to the lachrymal duct. Extending to the lower jaw or tongue, the third branch of the fifth pair is also implicated. As frequently, perhaps, more so, with the pain already described, do we find it in the ear, the mastoid process of the temporal bone and the angle of the lower jaw. This being the case, the recurrent branch of the fifth, and the portio dura are both concerned: but so intimate is the connexion of most of these nerves, that in a large proportion of instances of any length of persistence, the whole of them are apt in some degree to be involved. The agony is sometimes so extreme, as scarcely to be borne, inducing even a distracted or phrensied state of mind. Commonly, however, the suffering is not so great, and between the transient paroxysms there are remissions bringing with them comparative ease. The part is so exquisitely sensitive that the lightest touch cannot be tolerated, even less than firm pressure, and never fails to renew the excruciating dartings. Cases of recent origin particularly, are said sometimes to be attended by turgescency of the vessels of the affected part with some rubescence, or as is affirmed, by actual phlogosis, which, however, I have never seen—and occasionally, there is spasm or at least twitchings or vellications of the adjacent or remoter muscles. The circulation undergoes no material change, or not greater than might be supposed from the mere pain or the stimulating remedies usually employed. Decided fever, perhaps, never takes place. The duration of the attack is very indefinite, from one or two hours to several days, and its recurrence or exacerbation is alike in the day and night. Going off by gradual abatement, it leaves the part for some time afterwards either very tender or moderately sore, and without any further suffering or inconvenience.

Equally uncertain is the period of its return. As intimated, its revisitations are sometimes as regular as those of intermittents. But such instances are rare, and the interval may be a week, a month, a year or more, much depending in this respect on the nature of the cause, whether permanent or otherwise, or the degree of exposure to the excitements of an attack, or the case being acute or chronic, in which latter state the affection ultimately becomes nearly continued.

The preceding account regards more immediately the commonest variety of the disease, that of the face for which the name tic dou-

loureux is still retained by some writers. But it may be manifested in any or every part of the body, external as well as internal, by the acutest pain or soreness merely of the scalp on one side only, or in the occiput or frontal portions, or in a great degree throughout the tegumentary tissue, apparently not penetrating deeper than the sentient surface,* or in the intercostal muscles, or those of the shoulder, loins, hip, and extremities, upper and lower, pursuing the course of their respective nerves, sometimes to the ends of the fingers or toes, or expanded over the palms of the hand or soles of the feet.†

Locations of the disease in the large articulations are common occurrences,‡ while on other and less frequent occasions, the smaller are its seat. It is sometimes to be met with in the testicles,§ and still oftener in the mammæ.|| An attack may be confined to a mere spot. Thus, in one instance it occupied a space on the finger so small that it might be covered with a pea.

No one organ of the great cavities has any immunity from the disease. The brain does not wholly escape—the lungs, with their appendages, are frequently attacked—and the heart is still more exposed to its aggressions. Nearly, or perhaps quite as much, are the abdominal contents, the stomach, the upper and lower bowels down to the rectum, the liver, the spleen, the kidneys, the urinary bladder,

* Not the least remarkable case of this kind came under my own observation. Many years ago, I was consulted by a lady, who informed me, that after having suffered severely from neuralgia of the hip and lower extremity, she was seized periodically with exquisite tenderness of the skin, attended by an intense burning sensation, and occasional darting pains in various directions.

† This is the *neuralgia pedis* of Good, and the *neuralgia plantaris* of Chaussier. I have seen it both in the hand and foot. It is mostly confined to the palm or sole, though now and then shooting pains are felt up the limb.

‡ It occurs most frequently in the knee. M'Culloch remarks that it is apt to be mistaken for white swelling, and it is described by Brodie under the title of *hysterical* white swelling. My own cases of it had no analogy to that affection, and might more likely have been confounded with chronic rheumatism. They differed, however, from it in the total absence of tumefaction, and by the peculiarity of the pain.

§ Of this, I have known two instances, one in consultation with Dr. Physick. It is to be recognised by the characteristic pain, the absence of swelling and other changes in the testicle, and by uneasiness in the lumbar region.

|| This is an affection for which I have been so often consulted, that I should presume it to be common. It has heretofore been very much regarded as rheumatism. The breast undergoes no alteration: but from a centre, as it were, lancinating pains emanate, extending to the side, sometimes up the head, and down the arm. Tenderness on percussion is usually betrayed at one point of the cervical vertebræ.

and above all, the uterus and its dependencies have been noticed as affected in this way.*

Not to descend into details which were foreign to my design, and more particularly as I have hereafter to expatiate to some extent on the subject, it may be sufficient now to remark, that the affection wherever it is fixed, though in some measure modified by the peculiarities of the nerves or general structure, exhibits essentially the same features, and is observant of similar laws. Nearly in every instance there may be recognised the influence of identical causes in its production—the characteristic pain, distinct and peculiar—its transient or more fixed nature, together with the several varieties in regard to the entire paroxysm—the gradations of severity, its duration, the interval between its recurrences, and the mode, whether stated, or at irregular and uncertain periods. The leading differences when thus existing, are its greater proneness to fluctuation—sometimes very rapidly changing its position—that it is more apt to involve several nerves at a time, giving to it a wider pervadence, and that the pain is usually far less intense than in the affections of the face.

Neuralgia is chiefly incident to middle or rather more advanced age, from the fortieth to the sixtieth year of life, and mostly occurs in the female sex, of delicate irritable nervous habits or shattered constitutions. Exceptions however exist to these general rules. It is occasionally met with in persons of vigorous frames and the soundest health, and even in boys and girls. There is, indeed, a mitigated form of it to which the latter are very liable at the season of puberty or a little later, associated with much disorder of system.

In reviewing the etiology of neuralgia, we can hardly avoid being struck with the number and diversity of the causes to which it has been ascribed. No doubt is longer entertained that these operate on the centres of the nervous system, or on the extremities of their respective nerves, the impression being reciprocally reflected. As such is the fact it were desirable to make this consideration the basis of an arrangement of them. But I am discouraged from the attempt by its difficulty, enhanced by the narrowness of the limits allowed to this brief discussion. My design, at present, is to bring them under two heads, dividing them into such as are local and general.

* Cases of nearly all these varieties I have met with: but the uterine are most familiar to me. Girls about the season of menstruation are peculiarly subject to such attacks. They are often periodical, the paroxysms returning daily or more irregularly for several days at a time, and then disappear. The pain is truly neuralgic, darting from the uterus through the pelvis, to one or both iliac regions. Tenderness of the lumbar vertebræ will sometimes be detected.

Belonging to the former description are mechanical injuries of the nerves, inflicted by wounds, excised, lacerated, punctured or contused. Examples to this purport are abundantly recorded, some few of which I shall mention. There is a case related, arising from a cut in the arm with a knife—a second by a cut in the cheek from a piece of China, which remained concealed in it—a third from the bite of the little finger by a child—a fourth from laceration of the hand by an explosion of gunpowder—several from the puncture of the lancet in venesection, and two instances by a blow in the eye and on the sinciput. Cases are also to be met with, which followed surgical operations, particularly amputations, attributed to the irritation of the excrescent tubercle formed on the end of a divided nerve. Tumours under other circumstances, are a still more frequent cause of the disease.

Nor is it less determined that it proceeds from lesions of bones, operating by the irritation of spiculæ or other asperities, or by the acrimony of the fluids when caries prevails, which conjecture is rendered probable by other foul ulcers having had an analogous effect. Cases in proof of this have been published by DESSAULT, Sir H. HALFORD, and among others which might be cited, is the memorable one of Dr. PEMBERTON, the origin of which was traced to an abscess in the frontal sinus. Much such a case has recently been under my care, which, however, terminated far more happily. Great mischief in this way is undoubtedly occasioned by compression. Not usually incident to lateral curvature or caries of the spine, it has sometimes been ascertained in connexion with both. The pressure of the head of the child in parturition certainly has induced it, most usually in the rectum, having seen it myself independently of other proofs of the fact which are extant. But far more operative is the fashionable corset. By tight-lacing, either the intercostal nerves, or the spinal marrow itself, becomes irritated, from which I have again and again remarked very severe neuralgic distress. That it, particularly when of the facial form, is dependent on dental irritation, and more generally than suspected I am persuaded, as well from my own observations as those of other practitioners.

Of the more general agencies in the production of neuralgia, the first which claims to be noticed, from the importance recently attached to it, are marsh miasmata. By MACCULLOCH, indeed, who has brought to the elucidation of the subject great fidelity of observation, and industry of research, with adroitness in the collation and analysis of testimony, the hypothesis is presented with such plausibility, that

it can scarcely be resisted. Not prepared to go the extent to which he applies it, for in the ardour of generalization, he seems disposed to exclude almost every other influence, I think he has shown as well the affinities to the neuralgic disturbances, of numerous affections hitherto deemed dissimilar, as that the immediate malarious source of the latter, is infinitely wider spread than had ever been suspected. Examples in proof of these positions he adduces from his own and the observations of others, that independently of some powerful reasoning, his conclusions with due qualifications, are satisfactorily made out and established.

The recollection of my own practice furnishes no inconsiderable amount of evidence corroborative of the conviction to which I have arrived. During the prevalence of pernicious and anomalous intermittents among us some years ago, I repeatedly saw the paroxysm assuming the varied shapes of neuralgia, that of the optic and facial nerves, sometimes as hemicrania, on other occasions in the limbs, or the muscles of the abdomen, and also instances in the organs of the large cavities, especially in the latter, when the attack had become chronic, usually accompanied by the aspect and condition expressive of the protracted operation of palludal exhalations. Not the least curious of these instances was related to me by my friend, the late venerable Dr. BELVILLE of Trenton, where the tip of a single finger in himself was for many weeks seized at precisely the same hour of the day with genuine tic douloureux, which having resisted diverse local applications, came promptly to be remedied by the sulphate of quinine.

As among the occasions of the disease, inordinate venereal indulgence cannot be omitted. Legitimately practised to excess, it may be productive of this effect, though much oftener it is to be traced to a criminal habit too disgusting to be more distinctly expressed, which, while operating to the derangement of the whole nervous system, is chiefly displayed in its severest form in the loins, lower extremities, and head.

Constitutional disorder from causes not so apparent, seems also to originate or conduce to the disease. Cases of it are habitually seen associated at least with those depravations of the digestive apparatus, bearing the nearest affinity to, or even the semblance of identity with the multitudinous and protean affections, which by a sweeping generalization, are embraced under the vague term of dyspepsia. We learn indeed from good authority, that a "careful review of all the published cases of neuralgia shows, that more than three-fourths of them manifested general disorder of health, and especially of the di-

gestive organs.”* But while this is conceded, it is no less true, that it may be produced by lesions of any of the internal organs, or systems of organs, and especially of the uterus, by which the general condition of health is impaired. There is moreover great reason to suspect that a bad habit of body, brought on by the depredations of gout, and especially in its irregular and atonic forms, either lays the foundation of, or more directly excites some of these attacks. It is probable that not a few of the cases to which an allusion has been made, with vitiations of the digestive organs without an obvious cause, do thus originate in arthritic influence.

The state of anemia, whether brought on directly from excessive sanguineous depletion, by venesection, or hæmorrhage, or more slowly by a penurious, impoverishing diet, or by those organic or functional disorders which interrupt the process of hæmatosis, must be assigned as a prolific source of the disease. Dependent on this exsanguineous exhaustion, cases of it are of the most common occurrence. My friend Dr. P^HYSICK tells me, that he saw many such succeeding to the recoveries from yellow fever where blood-letting had been unduly practised, and they are as frequent under alike circumstances of other diseases. As sequelæ of hæmorrhage, particularly uterine floodings, who has not witnessed them, and not less in connexion with inveterate cachexy, from vitiation of the nutritive operations? Though any part may be involved, it is mainly the head that experiences the excruciating and peculiar neuralgic suffering.

The preceding are the principal of the remote causes of neuralgia in its several modifications, and which often are brought into action without the interposition of any further agency. But the latent predisposition is sometimes obviously awakened, and in a case only suspended, it may be immediately revived by an exposure to cold and moisture, or a draft of cool air, or walking, or other corporeal exertions, or by mental application, or by anxiety or depression of spirits—or conversely, the active emotions, or by touching the part, and when seated in the face or jaws, by chewing or talking, or hawking or spitting, or coughing or sneezing, or blowing the nose, or taking into the mouth any thing hot or cold, or sweet or acid, or washing the face, or combing the hair, together with other excitements of an exceedingly trivial nature, even by putting on a pair of spectacles.

Neuralgia well marked, can scarcely be mistaken. Its leading and distinguishing characteristics are a peculiar pain aptly ex-

* Med. Chir. Review, for the year 1828.

pressed by the term *tic*, consisting of successive shocks darting along a nerve or nerves as rapidly as those of electricity, and as transient, or when slighter, mere vibrations, seldom or never attended by swelling or any apparent inflammation, the paroxysms returning periodically, sometimes as regularly as intermittents in their several types. This however applies more to the disease in its acute form, and especially that affecting the facial nerves. Located elsewhere, or becoming chronic, it is more obscurely designated, though under all circumstances, so retentive of some of its own features, as to be recognised with little hesitation or perplexity.

Neuritis, and especially of the nerves of the teeth, occasioning what is called tooth-ache, bears the closest analogy to it when seated in the face. It may however be distinguished from ordinary and genuine odontalgia by the character of the pain, it being in the dental affection, deep-seated, more obtuse, and permanently enduring, ultimately followed by swelling of the cheek or gums, often ending in suppuration, or other effects of the inflammatory process. Cases without these symptoms or events, are probably always of a pure neuralgic nature.

To some of the varieties of rheumatism it is also said to have a close resemblance, from which however it so materially differs, that they need not be confounded. The seat of the latter is in the nervous, and of the former in the fibrous and muscular tissues. Nor are they induced by the same remote causes. Those of neuralgia are various, and rheumatism seems to originate only in a cold, moist atmosphere. An attack of the first is revived by many and the slightest circumstances, and of the second by a few and powerful influences only. Equal contrarieties exist in the symptoms. The pain of the one is acutely piercing, ticking, lancinating, limited in its direction, and transient—while that of the other is a dull, gnawing, throbbing, burning ache, more diffused and steady, or enduring. Neuralgia is without phlogosis or its terminations, and scarcely ever with any appreciable disturbance of the circulation, and the other is as uniformly the reverse, exhibiting in some parts the signs of the inflammatory process, ending in effusions and extravasations. This affection of the nerves, even when most protracted, does not impair the constitution or particular structures like rheumatism, which leads to the most serious disorganizations. Each is cured moreover by opposite remedies.

But though neuralgia is distinct from other diseases, it is not so easy to discriminate its own varieties as arising in the different portions of the nervous system. Being a matter of great practical im-

portance, I shall endeavour to bring together those signs which are mainly relied on for its elucidation. Emanating from the encephalon, we are told by a distinguished authority, “that the case is always preceded and attended by manifestations of cerebral disease, such as pain, giddiness, confusion, or some other uneasiness in the head, more or less disorder in the functions of some of the external senses, with symptoms of congestion or increased action in the vessels of the brain, and sometimes by a simultaneous or sympathetic affection of the stomach or liver, a circumstance not uncommon in many diseases of the sensorium.”*

As parts of the spinal column may be concerned, so do its affections vary. The symptoms of the superior cervical division are pain in the scalp, shooting in various directions up the occipital, even to the frontal portion, or laterally along the temples or over the face, or sweeping behind the ears, or around the lower jaw, productive of rigidity of the muscles, impeding its movements and those of the head—difficulty of speaking, or as may happen, loss of voice, with vertigo, tinnitus aurium, and similar noises. These latter however are rare occurrences, and are owing probably to the implication of the medulla oblongata. As indicative of irritations of the inferior cervical portion it may be stated, that the pain is seated in the superior part of the chest, about the clavicle or scapula, or it runs down the arm sometimes even to the fingers, or passing forward, either the superficial integuments or the mammæ in females, one or both suffer extremely by exquisite soreness, or intense darting pains.

Many of these symptoms are common to the affection of the upper part of the dorsal division, though it is more strikingly characterized by pains in the intercostal muscles, or in the margin of the ribs, or in the sternum, or epigastric region, or in the integuments behind the chest—the acuteness of the pain being occasionally exchanged for dyspnœa in various degrees. Where the lower half is irritated, together with some of the preceding phenomena, there are a sense of constriction across the waist, and great tenderness of the parietes of the abdomen, attended by pains through the muscles.

In the affections of the lumbar and sacral section, we have a dull ache, or acute pain in the muscles of the loins, and those of the hips, with the lower extremities in a state resembling that I have described the upper to be, with this peculiarity, that if the individual attempts to walk, he totters or rolls, his knees giving way, feeling no security in his step, exhibiting altogether the appearance of inebriation in his

* Armstrong.

movements. But it is to be recollected, that different and remote portions of the column may be at the same time implicated, and it has happened to be affected, though in very rare instances, throughout its whole extent.

As the spinal marrow in its different parts is concerned, so may the ganglia or branches of the sympathetic nerve, one or several simultaneously, and the symptoms modified accordingly, to trace which minutely is not my purpose. They are in a word such as denote depravation of the organs deriving their nerves from this source: thus, the heart or great blood-vessels violently palpitate, or are seized with true neuralgic pain, the lungs suffer as in spasmodic asthma, or the attack being more comprehensive, we have angina pectoris. The stomach and bowels are assailed by cramps or colics, mostly in the shape of what is called gastrodynia, or by pains more piercing and fugitive, not one of the abdominal viscera entirely escaping, and especially the kidneys, urinary bladder and uterus.

Connected with these various disturbances, there is often great viti-ation of the secretions, as witnessed in the prodigious accumulations of flatus in the alimentary canal, or of the limpid fluid in the stomach constituting pyrosis, or in the occurrence of the diabetic discharge, or in the deviations of the menstrual flux, increased or suppressed or changed even to the leucorrhœal fluid.

Closing this analysis I have to remark, that though towards the establishment of a diagnosis in relation to the origin of the disease in the several sections of the nervous system, no slight assistance will be afforded by diligent attention to the discriminating circumstances pointed out, these must be received with some limitations of confidence. Even when it arises in any one part, it is prone to implications, so perplexed and entangled, as no longer to be separated or traced back to its primitive source. This tendency to coalition is greatest between the affections of the spinal and ganglionic nerves—they, indeed, having seldom for any length of continuance a distinct existence, though it is oftener to be observed of the former than latter.* The most certain test of irritation of the spinal marrow is by careful percussion or pressure, or by sponging the column with hot water, sensibility being betrayed at some point by the one or other means, rather I presume of the nervous twigs supplying the processes

* Thus it will be found, that almost immediately the affections of every part of the apparatus of organic life evince such a complication. We see it conspicuously in colic, where the agony is as great in the back, as in the bowels, and relief sometimes more promptly afforded by applications to the former, than latter part.

and arches of the vertebræ and the muscles and ligaments attached to them, than the marrow itself, enclosed as it is in a bony case.

No great encouragement have we hitherto received to prognosticate favourably in this disease. Cures undoubtedly of recent attacks are often effected, and occasionally, too, in the more chronic states of it. But it as frequently, almost, has baffled our efforts, and especially where it had become fixed and confirmed. Duration, therefore, exercises an influence over the curability of the disease—and scarcely less so, determining from what I have seen, the seat it occupies, the general condition of health with which it may be associated, and above all, the cause by which it is produced, and the ascertainment of that exactly. Excepting such cases as proceed from partial and obvious injuries, I have found those of the spinal marrow to prove most certainly manageable, owing probably to the facility of detection, and the direct application of the appropriate remedies. Coming from the brain, contrary to the language of Armstrong, I have known it much seldomer relieved—and exceedingly intractable for the most part, are the affections of the ganglionic system of nerves, especially if complicated with disorder of the abdominal viscera, and the cachectic aspect, so generally concomitant on it.

Of the propitious signs, among the most so, is the regularity with which the intermittent character is maintained, denoting that the case does not arise from any immoveable fixedness of cause, and when convalescence is about to take place, it is manifested usually by a progressive lengthening of the intervals between the paroxysms, and a correspondent diminution of the intensity of suffering. The reverse in these respects is of course of opposite import.

In seeking the causes of the uncertainty and want of success in the treatment of neuralgia we shall further discover, that not less is owing to our ill-regulated practice in it, than the intractability of the disease itself. Considered as a new, and extremely anomalous affection, it was for a long time viewed mysteriously, and instead of investigating its pathology, efforts, purely tentative and empirical were made for its removal. Disappointment followed, as might have been anticipated, from such gropings in the dark, and though a better course is begun to be pursued, it is still marked rather by a propensity to multiply the means, than to ascertain the principles on which the cure should be conducted. Even up to the present moment, the medical journals teem with fresh contributions to the overgrown and redundant accumulations of remedies, with very seldom a suggestion of any value as to their peculiar adaption or the exact circumstances of their administration.

But though our skill may have hitherto been rebuked, it is consolatory to reflect, that the disease cannot be deemed a fatal one, and that it often spontaneously disappears, submitting to the resources of nature, or to agencies which we cannot supply. Numerous cases are reported which have thus passed away, after a lengthened duration of suffering, owing to a revolution in the constitution by time alone, or the supervention of some other disease, particularly the eruptive, or by a total change in the habits of life, or by a residence in a more genial climate, or by merely a shock from terror or some other powerful mental emotion.

Death rarely taking place in this disease, our information is very slender in relation to the post mortem appearances. Those which occasionally have been met with, it is difficult to determine whether they be cause or effect, or totally independent of this affection. As examples of this equivocal nature may be cited the cases lately reported by Sir Henry Hallford, where he found in one an exostosis of the alveolar process—in a second, disease of the antrum Highmorianum—in a third, a large deposit like frost work on the internal surface of the skull—as well as those from other writers, such as an abscess in the frontal sinuses, or a morbid state of the foramen through which the nerve passed, or tumours and other adventitious growths of diverse kinds. Most likely all such disorganizations are rather the occasion than the consequences of the disease. Though in some few instances the nerves have been found with increased turgescency of the vessels of the neurilema, and preternaturally florid, or enlarged and thickened, there were wanting the serum, lymph, or pus, with the general changes of structure incident to neuritis. Taking the results of the whole of the dissections of which I have any knowledge, it may be affirmed, that in much the largest proportion of the legitimate neuralgic affections, no appreciable alteration existed, and which is very remarkable, considering the intensity of irritation and pain endured. Because however of no apparent, we are perhaps not entitled to infer that there were no actual changes. The nervous organization is so exquisite, that the difficulty of detecting its abnormal deviations is great, and it may be added, that the disease being mostly seated in the root, there are the derangements, which part has seldom been inspected.

In approaching the consideration of the pathology of neuralgia, I feel much of the embarrassment confessed by those who have been called to encounter the disease, or have written on the subject. Thus far however seems certain, that it commences at a point as previously described. Nor perhaps is it less true, that while the irritation has

generally a local, it may have also a constitutional origin. By Mr. ABERNETHY it is declared, “that the disease is as much so as gout or rheumatism,” and indeed another respectable authority* defines it to be “a local affection having a constitutional origin.” True to a considerable extent, this view cannot be received as of universal applicability. The common coincidence of neuralgia with distemperature of system is undeniable. But whether as the cause or effect, it is in many instances difficult to determine. Be it as it may, of the precise character of the initiatory or subsequent and consequential actions we are not accurately informed. It has been surmised on a review of the mode of origin, the symptoms, the autopsic appearances, and the method of cure, that the condition varies in each particular in different cases, and in the progressive stages of the same case. Thus it is said, that though some attacks clearly arise from simple irritation, and which state is throughout undeviatingly preserved, it is equally evident that in other cases, there is occasionally inflammation of the nerves. Granting this, it still remains doubtful whether phlogosis should be deemed an essential ingredient in the neuralgic condition properly defined. That the disease may start from a point, and run its course without any cognizable degree of it, will not be denied, and such being correct, it follows that though inflammation may sometimes be disclosed, it is merely an effect of a preëxisting irritated state, or accidental in its occurrence, and not material to the disease, however it shall contribute to change its aspect, or influence the treatment. Neither simple phrenitis, spinitis, nor neuritis, present an identity with neuralgia—these affections on the contrary, when purely elementary or uncombined, displaying the most striking differences from it.

Discarding then, as not comporting with facts, the hypothesis so speciously made out by PARRY, VAIDY, and others, that the disease is caused by undue vascularity and phlogosis of the nervous tissues—and also the notion of ARMSTRONG, by whom it is referred to an essentially similar condition of the brain, I am led to the adoption of an opposite conviction of its nature. Did it consist in such a state as they have represented, it were impossible to explain the efficacy of the Peruvian bark, the Martial preparations, and the ordinary plan of treatment generally in its cure. The only distrust I entertain of the correctness of this view, concerns the state of the *punctum saliens* of the affection. Numerous examples does the history of disease supply of inflammation in the primary source and the secondary, and most ma-

* Palmer.

nifest affections though painful, and sometimes exclusively so, being destitute of it. Contemplating the pathology of neuralgia in this light, we may at least reconcile the propriety of our practice of local bleeding and counter-irritation at the primarily affected part, with the subsequent use of medicinal tonics and other means of corroboration. Carefully examined, there will be found no contradiction in the preceding statement. As offspring long survive the death of parents, so does disease the source from which it sprung. The “fons et origo” of it may become extinct, and itself shall endure in unabated force. This is indisputably true as to the neuralgic affections, and my remarks, which might be amenable to hasty criticism on the score alluded to, are vindicable as designed to apply to the incipient and ensuing stages of the disease. Commencing possibly in inflammation of the root, this ceases in the branches, which take on another and very different state, enduring indefinitely often in an independent existence. Do we not habitually witness in confirmation of it, the prejudicial tendency of those very remedies, local bleeding, &c. in the chronic disease?

But nervous irritations vary in themselves, and lead to results of infinite diversities, as is illustrated in the numerous diseases referred to them as the proximate cause. Neuralgia itself seems modified by its locations, owing probably to peculiarities in the nerves proceeding from the several centres. Between that of the face and the visceral organs, the most striking difference is observable, the one being seated usually in the cerebral, and the other in the ganglionic nerves. We see this distinction as well in the kind and degree of pain, as in the effects of remedies. To inquire into the intimate nature of neuralgic irritation, were as futile and unavailing in the present state of our intelligence, as similar scrutinies have heretofore proved in regard to other diseases. The fact is, that of the entity of any pathological condition, we are utterly ignorant, and from its subtlety will probably continue to elude our researches to all time. To say that the irritation here is *sui generis*, the language in ordinary use, is merely to repeat a barren truism, the vulgar refuge of ignorance, whose practice it is to shelter itself under the substitution of a sonorous phrase for real knowledge. Looking at its phenomena we can scarcely infer more, than that the residence of neuralgia is exclusively in the nerves of sensation, and from its analogy to some of the varieties of rheumatism, in the fibrous or exterior covering especially, having their sensibility raised to the highest pitch of exaltation, to which circumstance many of its peculiarities may be plausibly assigned—in this respect, being directly the reverse of palsy.

In regard to practical convenience, some perspicuous classification of the neuralgic affections is much to be desiderated. The most natural and advantageous, perhaps, would be to groupe them as occurring in the three great divisions of the nervous system—secondly, as confined to a single nerve or more extensively complicated—and lastly, as acute or chronic. But though such a scheme might be endeavoured, I am apprehensive, insuperable difficulties would attend its execution in the present obscurity of the subject.

The treatment of the disease in every nosological plan, must divide itself into what is proper to mitigate the anguish of the paroxysm, and in the interval, with the intention of a radical cure. Many palliatives have been proposed, as venesection, leeching, counter-irritants, blisters or caustics—lead plasters—lotions of a solution of the extract of belladonna or opium—the endermic application of the acetate of morphia—steaming, and emollient poultices—acupuncturation—compression by a tight bandage—the internal exhibition of opiates, colchicum, &c. &c. It were easy to collect proof of the occasional efficacy of each of these remedies, though the whole as frequently have proved impotent to any useful purpose. The reason of the failure of the topical means, is probably to be imputed, in part, to their being not always placed at the root of the affection, which is commonly remote from the seat of the pain. It is not easy, indeed, in any other way to reach an explanation of such opposite results as are reported of the same remedies. But there is a choice in the measures of mitigation. General blood-letting is only useful when plethora exists, or a phlogistic condition has been superinduced by cold or other causes reviving with exasperation the neuralgia, sometimes presenting a sort of mixture of rheumatism, and especially so when the large organs, or the great centres of the nervous system, are directly assailed. Leeching proves more generally beneficial, and cannot be dispensed with on some occasions, of the inflammation of the neurilema or of the nerve, and is one of the most effectual expedients in exacerbations of spinal irritation. Caustics are preferable to epispastics, particularly in neuralgia facialis, put behind the ears. By steaming the part, if there be exquisite tenderness, it may be assuaged. The only case to which acupuncturation is fitted, is where large muscles are involved, as those of the loins or hips, occurring mostly in rheumatic or gouty habits. The effect of the internal exhibition of opiates, is varied by the position of the affection. Nearly useless in neuralgia facialis, it is of the greatest service in that of the ganglionic system, and above all, in the attacks of the alimentary canal. Yet it is not without considerable power over the irritations

of the spinal nerves. From the external application of morphine, I have known some success. Great relief may sometimes be expected from colchicum liberally prescribed. But what on the whole will be found as certainly as any thing else to abate the intensity, and indeed sometimes to break down the paroxysm, is to nauseate the stomach for several hours by the tartarized antimony, or preferably, by the sulphate of copper, or by the smoking of a cigar, where the individual is not accustomed to the practice, or judging from a single instance, active vomiting, which I saw on a recent occasion most prompt and decisive. Nausea exercises an extraordinary controul over pain—it will suspend or even subdue the agony of a paronychia, and puking is admitted to be one of the best means in several of the affections, as odontalgia, hemicrania, &c. not altogether dissimilar to neuralgia, which analogies led me to this extension of the practice.

It is proper further to mention, that very lately the application of a magnet of enormous power has proved, according to European reports, wonderfully effectual in alleviating, or more decidedly controlling the disease. Trials of it have just begun in this city, and though by some it is favourably appreciated, I suspect the preponderance of evidence is against it, and that it will soon turn out to be one of those delusions so often imposed upon us, and which for a season commands too general confidence.

From a retrospect of the history of the disease, it is obvious that on account of its numerous causes, and the several conditions which it assumes, as well originally as in its progress, that no uniform mode of management in reference to its eradication, can be made of universal, or even general application to it. Called to a case, the first inquiry should be directed to ascertain the point of its commencement, and the existing state of system. Tracing out satisfactorily the source whence the irritation flows, an endeavour is to be made to interrupt the stream by cutting off the fountain of supply, and to effect which, some discrimination is demanded in the selection of measures. Thus in the event of its originating in a tooth, or the pressure of a tumour, or the frettings from a spicula of bone, or in any conceivable cause removable by a surgical operation, this is to be performed. Even the neuralgic irritations following the amputation of a limb, have in several instances been cured by a repetition of the operation. Those cases dependent on other local injuries, as slight wounds, which after healing irritate a nerve, are most effectually relieved by an application of a caustic to the part, with proper dressings to convert it into a running sore.

It were useless to go through with this class of affections. The

principle having been stated, the treatment may be readily accommodated to the variations of individual instances without any special instructions. There is however one remedy I must not pretermitt, from the value formerly, and which continues in some degree to be attached to it. Not entirely with a view dissimilar to that on which the preceding measures are inculcated, it occurred to M. André, by whom the disease was probably first noticed, to divide the offended nerve. The reports of the effect of the operations were various, though from the whole it may be collected, that the failures greatly preponderated. Even when relief was afforded, it proved only temporary, and sooner or later the affection returned unmitigated. By Sir Everard Home, as well as I recollect, it was suggested that the want of permanent success in the operation is owing to the nerve resuming its functions on the reünion of its divided ends—a process he demonstrated to take place in a very short time, to obviate which objection, a portion of the nerve or a large piece of the surrounding integuments, according to the position of the affection, has since been cut away.* Thus improved, the operation is rendered undoubtedly more effectual, many cases having been recorded of entire cures from it by the highest authorities, as HAIGHTON, ABERNETHY, EARL, LISFRANC, WARREN of our country, &c. though its utility, on the whole, is so equivocal, that it is rarely practised. Being effectual for a time, sooner or later, here too the affection recurred in a majority of cases. That it cannot be calculated upon with any certainty is plain, other considerations aside, from the difficulty of reaching the seat of the affection, or of ascertaining the precise nerve, several branches being often simultaneously involved, and in a more general view its value is diminished, it being susceptible of application to only a small number of cases. Nevertheless, since it has sometimes accomplished cures, it may still be held in reserve for those emergencies where other resources have been exhausted, and it can safely be attempted.

Governed by the presumptive origin of the nerves concerned in neuralgia facialis, the proper treatment will consist in repeated topical bleeding around the neck from ear to ear, or down the cervical vertebræ, and then of issues by the vegetable caustic, or the moxa, in the same position—and I think I have found the latter more useful when put over the mastoid processes of the temporal bone. No less

* Lisfranc has reported a case of neuralgia of the pericranium, occasioned by external violence, which he completely cured by removing a portion of the integument of several inches in extent, embracing the entire seat of the affection.

serviceable are these means in that modification of the affection imitative of hemicrania. The efficacy of this treatment in both instances I might readily illustrate by some striking examples, could I spare the space for their admission.

No doubt can now be entertained that a common source of neuralgia, confined to a single part, or in its fluctuations attacking many parts, or at once widely pervading the system, has its origin in spinal irritation. The remedies are topical bleeding and blistering, or issues, with a state of absolute rest. As to the last, I am aware that there is some difference of opinion—but from *à priori* reasoning, strengthened by actual experience, I have long been convinced that under all circumstances of an irritated spine it is indispensably necessary to a cure.

Nearly the same course is to be pursued in the affections of the grand sympathetic nerve, where such betray any intensity of irritation, or phlogosis, however slight, and it ought to be known, that applications to the spine are, in some instances, more effectual here, than to the abdomen, or directly over the organ assailed.

General bleeding in neuralgia I have found rarely of service. Even where decided inflammation prevails, it is usually local, and proves more submissive to remedies addressed immediately to the part. Yet the affection may be complicated with constitutional excitement, adventitious or otherwise, and in such a state the treatment must be correspondently accommodated.

Entertaining different pathological views, COTUGNO, ARMSTRONG, PIORRY, and several other writers, urge with great earnestness the depletory and antiphlogistic plan to the fullest extent in the disease. But on trial the practice has been found as unsuccessful as the speculation from which it is deduced is deemed erroneous, and by very general consent it is now limited to the purpose and condition indicated.

Hitherto I have presumed an integrity of the system at large—but as we have seen, this is very much the reverse, or it is mostly disordered in diverse modes and degrees. Before, therefore, instituting any practice regarding the neuralgia itself, that state of system originating it, or by which it is maintained, is carefully to be examined and rectified, which being accomplished, then a recurrence may be had to tonics, with some reasonable prospect of success.*

Of the tonics, perhaps, the best is the subcarbonate of iron.

* It would be alien to my purpose to treat on this occasion of the modes of correcting the various pravities of system associated with this disease. Derange-

This article in enormous doses, from a drachm or more, several times a day, was some years ago introduced by Mr. HUTCHINSON of England, and its utility verified by a host of practitioners. It has since lost some credit, to be ascribed perhaps in a degree to its general and vague employment. On what principle it acts is not exactly determined. As a tonic merely, its effects cannot be explained, and I am inclined to refer them to that property of lessening sensibility which it evinces in most nervous affections.

The nitrate of silver operates seemingly in the same mode, and is worthy of attention. Equally perhaps is the superacetate of lead and the preparations of zinc, though I have not heard of any fair trial of them.

The subnitrate of bismuth is not undeserving of regard, especially in the ganglionic affections. Experiments should be made also with the powder of nut-galls. Directly applied to an exposed nerve of a tooth, it so wonderfully deadens its sensibility, that it may be stuffed without pain, and hence it promises some advantage when internally administered, particularly in neuralgia of the stomach.

It is to be supposed, in a case attended by such acuteness of pain, the narcotics have not been neglected. Every one of them, on the contrary, has been abundantly prescribed, and excepting the stramonium and belladonna, the whole are now repudiated. By MARCET, BIGBEE, ELLIOTSON, &c. the strongest testimony is borne to the former, and the latter is not less sustained by the reports of BAILEY and other authorities. But I have derived little advantage from either of these, or any other of the class. Combined with quinine, their powers appear in some instances to be improved.

Neuralgia of a decidedly intermittent type, by whatever causes induced, whether malaria or other agencies, exacts those remedies which experience teaches interrupt most certainly paroxysmal tendencies. Copious as this catalogue of medicines is, I believe that the confidence of practitioners is now mainly reposed in the Peruvian bark and its preparation, the sulphate of quinine, *par excel-*

ments of the digestive functions will be found greatly to preponderate. As a course appropriate to a large majority of such cases, with a design especially to the correction or restoration of secretory power, the important end to be attained, I have to say, that incomparably the most effectual process, according to my experience, is to administer a few grains of the blue pill at night, to be worked off by a wine-glassful of the annexed mixture in the morning:—*R.* Infus. tarax. \mathfrak{z} iv.—Extr. tarax. \mathfrak{z} ij.—Carb. sodæ, \mathfrak{z} ss.—Tart. potassæ, Tinct. rhei, $\mathfrak{a}\mathfrak{a}$. \mathfrak{z} ij.

lence,* and in those of arsenic, particularly the arsenite of potash, which however I am sure is less active than the white oxide. The sulphate of copper has, perhaps, claims to attention, it having in one case under my care proved serviceable, where the other articles were nugatory. Nor ought the oil of turpentine to escape notice. It evinces considerable power over common intermittent habits, and we have some evidence of its utility in neuralgia sciatica especially.

Devoted as modern practitioners are to the employment of mercury, it can hardly be presumed that an extension of it has not been made to the disease under review. The trials of it in this country at least have been numerous, and I am afraid very discouraging. Except for the purpose of correcting certain vitiated states of system, generated chiefly by miasmatic influence, and here rather to its alterative than salivant effect, it seems to me that every other application of it must be inapt and prejudicial. Yet there are several cases reported as cured by a salivation. Led by some supposed analogy in their effects to mercury, the preparations of iodine have been resorted to in this disease, and with reputed success. But I confess that I have never witnessed any benefit from them, and am disposed to doubt altogether their efficacy.

Emetics, which we have learnt are probably useful in the paroxysm, are, I think, certainly so in regard to the removal of the disease. It is thirty years since I first employed them, and though they have often disappointed me, I have sometimes derived signal advantage from them. As they operate in the extermination of inveterate intermittents, so do they probably in the neuralgic affections. The case to which, according to my experience, the practice is best fitted, is where the pericranium becomes permanently tender with darting pains through it.

Connected with a gouty or rheumatic habit, regard should be paid to this consideration in the management of the case. It is under such circumstances, I suspect, that colchicum, which has acquired much confidence in neuralgic disturbances, is serviceable.

* This article is usually directed in too small doses, and hence probably one cause of its frequent failures. The foreign practitioners prescribe it far more liberally in this disease than we have generally ventured to do—some of them even in prodigious quantities. Not less than five grains, repeated several times a day, should be given. Combined with the dulcified spirit of nitre, and a little laudanum, its unpleasant effects are obviated. Thus united, I have seen my friend, Dr. Mitchell of this city, give a scruple of it at once in intermittent fever with the happiest effect.

It remains to mention electricity, galvanism, and magnetism. These agencies were at one time in considerable repute, which on a fair and more extensive trial, appears not to have been justified. Galvanism in a different mode of application, has, however, recently been very triumphantly directed by my friend Dr. HARRIS, in three cases of the disease. The mode is that recommended by MANSFORD, in epilepsy.* But here too, disappointments have been more fre-

* “It was said, that in order to fulfil the indication stated at the commencement of this section, it was desirable to establish a negative point as near the brain as possible, and a positive one in some distant part of the body. (a) Accordingly, a portion of the cuticle of the size of a sixpence being removed by means of a small blister on the back of the neck, as close to the root of the hair as possible, and a similar portion in the hollow beneath, and on the inside of the knee, as the most convenient place: to the wound in the neck, a plate of silver, varying according to the age of the patient, from the size of a sixpence to that of a half-crown, was applied—having affixed to its back part a handle or shank, and to its lower edge, and parallel with the shank, a small staple, to which the conducting wire was fastened. This wire descended the back till it reached a belt of chamois leather, buttoned round the waist—it then followed the course of the belt, to which it was attached, till it arrived opposite the groin on the side it was wished to be used; it then passed down the inside of the thigh, and was fastened to the zinc plate in the same manner as to the silver one. The apparatus so contrived was thus applied:—a small bit of sponge moistened in water, and corresponding in size to the aperture in the neck, was first placed directly upon it—over this a larger piece of sponge of the same size as the metallic plate, also wetted, was laid—and next to this the plate itself, which was secured in its situation by a strip of adhesive plaster passed through the shank on its back, another above, and another below it. If these be properly placed, and the wire which passes down the back be allowed sufficient room that it may not drag, the plate will not be moved from its position by any ordinary motion of the body. The zinc plate was fastened in the same manner—but in place of the second layer of sponge, a bit of muscle answering in size to the zinc plate was interposed: that is, a small bit of moistened sponge being first fitted to the aperture below the knee, the piece of muscle (b) also wetted then followed, and on this the plate of zinc. The apparatus thus arranged will continue in gentle and uninterrupted action from twelve to twenty-four hours, according to circumstances. This last is the longest period that it can be allowed to go unremoved: the sores require cleaning and dressing, and the surface of the zinc becomes covered with a thick oxide, which must be removed to restore its freedom of action; this may be done by scraping or polishing: but it will be better if removed twice a day, both for the greater security of a permanent action, and for the additional comfort of the patient.”—*Mansford on Epilepsy*.

(a) The hypothesis from which this practical expedient is deduced, supposes an undue accumulation of electric matter in the brain, at the expense of other parts of the body, and hence the cure depends on equalizing the distribution of it.—N. C.

(b) Either a piece of soft buckskin or parchment is equally effectual, and less offensive than the muscle.—N. C.

quently experienced, as indeed was to be expected from the diversities of the disease. He tells me that it has only proved effectual in the affections of the face.

As enumerated, such are the remedies in neuralgia, which in various degrees, retain the confidence of practitioners. My aim in the preceding therapeutic discussion, has been to make as just and discriminative an appropriation of them to the several forms and conditions of the disease as I could accomplish. It is not however to be understood that this distribution of them is absolute or exclusive. The general condition being favourable, several of the tonics especially are suited to a wider application than given to them by me, and I have reason to think, that in some instances, the sulphate of quinine and the carbonate of iron united, are more effectual than either article separately. But every thing connected with the disease is so obscure—its causes, its seat, the precise pathological state in its several modifications, that I am sensible I have not been very successful in the attempt. Nor do I believe, at present, it can be done. To a certain extent we may be governed by principle in the treatment, or in other words, having carefully studied the case, adapt the means with exactness to the views adopted of it. But in other instances when dark and involved, we shall be forced to depart from this order, and plunge into the devious path of empiricism, which I have endeavoured to avoid, prescribing vaguely or without any rational guide.

With a few remarks on regimen, I shall close this disquisition. To diet not much importance has been attached. But varied as are the forms of the disease, and the state of the system with which it is associated, surely some discrimination is demanded. Generally speaking, nutritious animal food of light and easy digestion answers best, and is indispensable in feeble and exhausted conditions, especially should depravation of the stomach and subsidiary organs exist. On the contrary, cases of a different character are presented, where to a full and phlogistic diathesis, there is united the highest possible degree of local irritation, as is strikingly exemplified in many of the spinal affections. Common sense here dictates a considerable reduction in the course of living.

The same accommodation to circumstances is to be observed in other respects. Exercise, or even a journey operating in part by a change of air and certain moral influences, is highly beneficial in many instances, while in others, aggravated as they must be by motion, it is altogether precluded. There is a maxim of universal application. Let the regimen be such, as shall harmoniously coöperate with the general plan of treatment.

Connected as this disease commonly is, with constitutional disturbance, there is forced upon us the value of regimen, and some other analogous means of cure, among which is a resort to our mineral springs, and particularly to the thermal waters of Virginia. Miraculous almost in the relief they afford to arthritic, rheumatic, and the affections generally having a resemblance to neuralgia, it is presumable that they would also act favourably in it.* Combined with a bath of unequalled excellence, they offer the perfection of climate as regards alike comfort and salubrity, with every social advantage, elegance of entertainment, and delightful recreation for body and mind. These are strong recommendatory considerations, not heedlessly to be disregarded.

Annexed will be found some cases, selected out of a large number which have come under my own observation, as the best adapted to illustrate the mode of origin, and treatment of the neuralgic affections.

Cases dependent on irritation of the teeth.—CASE I. In 1815 I was consulted by a lady in this city, who for the several preceding years had suffered excruciating agony in her face—at first at distant intervals, gradually becoming more continued. Convinced of the neuralgic nature of the case, as well by the character of the pain, as the total absence of inflammation in the attacks, and suspecting a tooth to be in fault, I had her teeth repeatedly examined by a skilful dentist, without, however, his detecting the slightest defect, or even *any increased sensibility* in any of them—the whole appearing, on the contrary, remarkably sound and beautiful. But finally, on chewing a crust of bread, one of the cuspidati was broken off, exhibiting an entire decay, with the exception of the enamel, which was perfect. The stump being extracted, from that moment she experienced not the slightest uneasiness of the kind.

CASE II. Not long afterwards, a lady from Virginia, who had been afflicted for a lengthened period in the same way, came under the care of Dr. PHYSICK and myself. Though she could never trace the pain of the face to her teeth, perceiving two of the front ones nearly destroyed, we had the roots taken out, and a permanent cure ensued.

* What has been thus advanced conjecturally, I find, by a recent publication, is confirmed as to the decided efficacy of similar baths on the continent of Europe. To bathing may also be added the use of *douches*, by which is meant the projection of water on the affected part, from a height through tubes of various calibres.

CASE III. More recently, a lawyer from Maryland consulted me for a similar affection, by whom I was informed that for upwards of three years his agony had been so frequent and intolerable, that he was forced to abandon his profession and all other business. Excepting an eye-tooth, the root of which only remained, the rest were in the finest condition—to the extraction of which fragment, he at first objected, as it had never given him any inconvenience—but labouring under an attack at the time, he speedily consented to its removal, and the operation was productive of entire success.*

Cases proceeding from diseased vertebræ.—CASE I. My attention was first awakened to this view of the origin of neuralgia by the case of a boy, whom I was attending for an enlargement of one of the dorsal vertebra. Each day, precisely at noon, for more than two weeks, he was attacked with violent, acute, lancinating pain of the true neuralgic kind, through his bowels, continuing for several hours, without any mitigation from remedies the best calculated to relieve the affection, had it been primarily seated in the intestinal tube, or of the nature of colic. Baffled in this way, it at length occurred to me, that all this suffering might be owing to spinal irritation, and acting under such a conviction, a treatment, consisting of an application of leeches, &c. was instituted with the happiest result. As confirmatory of the accuracy of my estimate of the case, it should be mentioned, that several times during the protracted confinement of the boy, whenever indeed any exasperated spinal irritation took place, manifested by an increased tenderness of the diseased vertebra, there was a return of the same sort of intestinal pain, and as readily submissive to similar means.

CASE II. During the present year, I attended in consultation a young lady, who, for several months previously, with the most indomitable constipation of bowels I have ever known, had constant acute, lancinating pains through the chest, in the direction chiefly of the intercostal muscles, extending occasionally to the head. On examination, two of the dorsal vertebræ betrayed considerable tenderness, without, however, the slightest protuberance or appearance of inflammation at these points. The case was, therefore, deemed one of simple spinal irritation, in which both the nerves of sensation and

* It is a curious fact, that in all the cases of dental neuralgia which I have seen, the tooth itself supplying the irritation evinced no increased sensibility. Nor have I ever seen the disease connected with the molares.

motion were concerned. By rest in bed, frequent leeching, and moxa issues,* she so far recovered as to lose all pain, and with such an amelioration of the state of the bowels, that they were readily opened by the mildest enemata. Continuing progressively to improve for some weeks, she then unfortunately quitted the recumbent posture, and engaged in too active exertions, from which a relapse ensued with marked aggravation. The vertebræ now were found enlarged and thickened, and in addition to the former affections, a partial paralysis of one of the lower extremities had taken place.

CASE III. But the most interesting instance I shall now relate, that of a lady from Georgia. Becoming my patient, she told me, that for several years she had been afflicted with pains in nearly every part of her body, and so exquisitely poignant, as scarcely to be endured, and that she had sought relief to no advantage from some of the ablest physicians at home and in Europe. My attendance was very short before I discovered her deplorable condition. By day and by night was she tortured by neuralgic pains in the head, as *clavus hystericus*, or in the chest, by rapid and repeated dartings through the lungs or heart, or diaphragm, attended with such embarrassed respiration, as not to admit of the recumbent position—or at other times entering the abdomen, affecting in a like manner successively the contents of that cavity, or leaving the interior, fixing, for a while, on the lower extremities. As a harpey, had the disease thus preyed upon her, and she was wan, haggard, and emaciated, with great irritability of stomach, loss of appetite, and weakened and vitiated digestion.

Different notions had been entertained of the case by her medical advisers—some considering it as dyspepsia, and others as chronic hepatitis, or rheumatism, or gout, or angina pectoris, prolapsus of the uterus, &c. according to the predominance of the symptoms at the

* The common practice of establishing issues immediately on each side of the affected vertebra is bad. They should be placed some inches from it, and the same remark applies to leeching. Being near to, or in contact with it, instead of operating as divellents or counter-irritants, they may have a contrary effect, exacerbating the irritation of the spinal marrow: but especially the intensity of inflammation, which is so apt to follow caustic issues, should be avoided. By this circumstance alone, I have, in more than one instance, seen neuralgic pain, and the paralytic state, conspicuously increased, and each again relieved, on the reduction of the inflammation, by emollient poultices, &c. Moxa issues are greatly to be preferred to those produced by any other means. They are less painful, more manageable, and decidedly of superior efficacy.

time. But on my very first visit, I was satisfied that such a train of phenomena could only be referred to spinal irritation, in which impression I was confirmed by the detection of an enlargement of the last of the dorsal vertebra, with tenderness on pressure of the spinal column to some extent. By confinement to her bed, and measures mainly addressed to the local affection, cupping, leeching, and blistering, sufficient alleviation was early procured to encourage a persistence in them, and at the expiration of several months, not a vestige of the disease remained.

Cases without such obvious lesions of the spine.—CASE I. Three years ago, a middle aged man called on me for my advice in relation to an inveterate neuralgia of the face, shooting in various directions from the ear through the jaws, up to the top of one side of the head—for the cure of which, much in vain had been previously done, and among other unavailing means tried, was the extraction of several teeth. By percussion and pressure a very great degree of sensibility was revealed about the first of the cervical vertebræ, followed instantly by darting pains in the courses already mentioned. No doubt could longer be entertained of the primary seat, or of the nature of the affection, and by repeated leechings around the tender point, and moxa issues over the mastoid processes of the temporal bone, he ultimately got well.

CASE II. Nearly about the same period I was called to a very young lady from the south, who had been previously attended by another physician for several months. It appeared from the history of the case, that she had led a gay and fashionable life during the preceding winter in a neighbouring city, by which her general health had become extremely impaired. The earliest symptoms were those of anorexia, irritable stomach, defective digestion, and costiveness, with head-ache, acute pain in the direction of the intercostals, and above all palpitations of the heart, shortness of breathing, and a sensation as she expressed it, “of sinking or giving way” in the epigastric region. By the time I saw her, these symptoms had reached an exasperated state, and there were added to them, the alternation of menorrhagia, and leucorrhœa to excess, with weakness of the loins, and unremitting dull ache in the lumbar portion of the spine, attended by a bloated, exsanguineous aspect. Learning that she had been in the habit of lacing her corsets very tightly, I at once suspected that this was the primary cause of all the mischief, having seen it produce the same effect in some other instances, by an injury of the

spine. Tenderness in two-thirds of the dorsal section of the vertebra was discovered.

As the loss of blood seeming inadmissible in such a leucophlegmatic condition, I substituted a repetition of dry cupping and blisters over the sensitive part, gave a small quantity of the blue pill at night, and the taraxacum mixture in the morning to promote the secretions, which end having been attained, she was put on the use of the phosphate of iron, united to a small portion of aloes to keep the bowels open. These remedies, with a state of rest, and a nutritious diet carefully regulated, by degrees so far abated the topical affection, and restored her general health as to enable her to go to the country, where, using moderate exercise, she entirely recovered.

CASE III. Last spring I saw a married lady from the country, who had come to consult me for what was apprehended to be the commencement of a cancerous affection of the left mamma. During the winter she had felt much soreness in it, with sharp, darting pains through it into the axilla, down the arm, which was also slightly numbed, occasionally extending upwards so as to involve chiefly the pericranium. The case had been thought to be rheumatism, and was treated by leeching, blistering, fomentations, to the breast itself, and by enveloping it in fur. These measures having failed, the more alarming view mentioned was taken of it, and in this state of mind she applied to me. Excepting great tenderness, I could perceive nothing abnormal in the breast. It was soft, without any tumour, or even the slightest change in the lymphatics. But on pressure it proved to be very sensitive, and a manifest increase of the shooting pains instantly followed. Though no appreciable degree of sensibility was evinced in any part of the spine, I so strongly suspected the whole affection to proceed from irritation of the cervical portion of it, that I determined to treat the case under such a view. Encouraged by the success of a single leeching and a blister to the neck, these were repeated several times, when all the symptoms had so much subsided that I permitted her to return home, and not hearing from her since, I presume they totally disappeared.

Cases of ganglionic irritation.—As remarked on a former occasion, such is the tendency of the different classes of nerves, and especially the spinal and ganglionic, to participate in each others sufferings, that instances of neuralgia of a distinct and independent existence in any of them, are seldom to be met with. Most of the preceding cases afford illustrations of this complication. The reverse, however, does

sometimes happen, and perhaps the following may be deemed examples of a separate and exclusive lesion of the ganglionic nerves.

CASE I. An elderly gentleman from Louisiana, came hither in 1828 to consult me about his health. The account which he gave of his case, was that though he resided in a miasmatic district of country, he had entirely escaped intermittent and other autumnal fevers which for several seasons had there been generally prevalent. But in place of these, two years before, he was suddenly seized without any obvious cause, with cramps of the stomach, which returned daily, and then every third day exactly as to the hour for several weeks. To these spasmodic affections succeeded darting, poignant pains through the hypochondria, in the region of the kidneys, and of the bladder—sometimes in the one, and at other times pervading more or less the whole, the disease gradually losing the character of periodicity, so that the attacks reverted very irregularly. The case had perplexed various physicians exceedingly, having been considered as gout, chronic hepatitis, nephritis calculosa, stricture of the urethra, &c. Being satisfied on a careful perquisition, that these conjectures were incorrect, I inclined to believe that the case was of a neuralgic nature, originating in miasmatic influence, and the more so from having seen during the prevalence of epidemic intermittent fever among us, which abounded in anomalies of all sorts, not a few similar instances. No tenderness, however, could I detect in any part of the spine, nor were there any symptoms referable to that source of irritation.

Correcting the disorder of the chylopoietic viscera, which was conspicuous, by an alterative course of the blue pill, and the occasional interposition of a purge, I then administered largely the sulphate of quinine alone, and with the piperine. These remedies were useful, though not decisive, and I next resorted to the sulphate of copper, which completely put an end to every affection.

CASE II. Not two months ago, a gentleman from the interior of this state, called on me for my advice, who had the aspect of even robust health. He was muscular, florid, and apparently with entire integrity of constitution—but he complained of having for a considerable length of time suffered severely once or twice a week by spasms of the stomach and bowels, with occasional darting pains throughout his abdomen. These were the only symptoms mentioned, and I found on witnessing several attacks, that he had accurately stated his case. No reason existed to suspect gout—his digestion was good, the bowels sufficiently open, and the evacuations natural in quantity, colour, and consistency. The case struck me as compounded of

gastrodynia and enterodyn timer, or a painful irritation confined to the ganglionic nerves expanded over the surface of the alimentary canal. His spine betrayed no tenderness, and he never referred any of his sufferings to that part. Before I saw him, he had been treated by general and local bleedings, by counter-irritants to the epigastrium, and by opiates and various antispasmodics, without however any permanent benefit. As his circulation was active, with some tenderness over a greater portion of the abdomen, I took from him by venesection and repeated applications of leeches to the tender part, as well as to the spine, about sixty ounces of blood. Though the force of vascular action was sensibly reduced by this depletion, there was no mitigation of the tenderness or other improvement. The attacks, indeed, recurred oftener and more violently. After an ineffectual trial of several remedies, I directed the sub-nitrate of bismuth and opium united, which for a time seemed to answer well: but ultimately ceasing to do good, these articles were discontinued, and in place of them, ten grains of the sub-carbonate of iron were taken every fourth hour. His cure henceforward rapidly advanced, and in three weeks I dismissed him well.

In dismissing this case, I cannot forbear to remark, that the Martial preparations, and especially the sub-carbonate of iron, I have found chiefly serviceable in the neuralgic disturbances of the stomach and bowels. I shall add only one other case, to show the connexion between the disease and arthritic irritation.

Early last spring, a gentleman beyond the meridian of life, of very gouty habits, was suddenly attacked with the most excruciating pain mainly in the direction of the frontal sinuses. But it occasionally extended to the side of the face, and even to the scalp, sweeping sometimes around the ear, and darting also, into the eye. The paroxysms uniformly occurred about 4 o'clock in the morning, lasting on an average two hours each attack, and then gradually abated, till an entire subsidence took place. General and local bleedings, vesications, opiates, and other narcotics, administered internally, and endermically applied, were of little service. From the paroxysmal nature of the affection, and the absence of fever, I resolved to try the tonics, and accordingly, the sulphate of quinine, the arseniate of potash, and the sulphate of copper, separately and united, were freely given, and for a time with some advantage: but they soon lost their efficacy, and the disease becoming still more afflicting, the whole of these remedies were abandoned. It now happily occurred to me to use the tincture of colchicum, and as a purgative at the moment was required, I

prescribed it in combination with calcined magnesia and the sulphate of magnesia. Much relief was afforded on the operation of the mixture, and by continuing the colchicum itself in such doses as to keep the bowels well opened, he very rapidly recovered. Though subsequently he has had several admonitions of a repetition of the disease in the same part, a recurrence to this medicine has uniformly obviated an attack, and it may deserve to be noticed, that during this period there has been a greater exemption from gout, and the enjoyment of better health than for many preceding years.

Most of the cases I have recited, it appears, were treated successfully. Let it not, however, be supposed that I mean to vaunt of my pretensions to any superiority of skill in the management of this disease. It were easy for me to present numerous instances of it in which all my efforts were baffled, and where the mortification was felt of surrendering up the patient without having mitigated his distress in the slightest degree. The fact is, that recent neuralgic affections occurring in a sound constitution, and especially when originating in spinal irritation, of which character was a large proportion of the cases I have adduced, will prove tractable to a practice regulated by judgment and discrimination. But very much reverse does experience teach is the result in relation to such as arise from certain causes, or are connected with particular lesions, or with depravation of the system, or have become inveterately fixed by duration only. Chronic degenerations, under all circumstances of disease, are difficult of removal, and as to the neuralgic affections, in this state, my own endeavours have so often failed, that I am prepared to pronounce them almost insuperable. My only object in the publication of these cases, is to lay before the profession a series of facts concerning a disease of extensive prevalence among us, deeming them calculated as well to shed some light on its nature and treatment, as to encourage others to investigations and discoveries to overcome this, one of the most excruciating maladies which afflicts mankind. That they are imperfectly related, I am aware: but having designed them merely as illustrations of a lecture on the subject of neuralgia, an occasion where minuteness of statement is to be avoided, I have preserved only summaries, and it were vain now to attempt to supply deficiencies by an appeal to my memory for accurate details after such a lapse of time.

ART. II. *Reports of Cases treated in the Baltimore Alms-house Infirmary.* By JAMES HENRY MILLER, M. D. Physician to the Institution.

WIDE as the field of science has been expanded by the number of recent discoveries and the extent of modern improvements, still it is but too justly alleged that they have availed very little in practical utility. Physiology has been highly endowed by contributions from the collateral sciences, yet pathology cannot boast a comparative amount of acquisition. The former has placed many of the agents of nature under requisition, and derived from their aid much valuable aid; whilst the latter has stood in idle astonishment and profited nothing from observation.

A considerable period has already elapsed since galvanism has been made to arouse dead muscle into action through the intermediation of the nerves, and even yet application of this power has been made towards the restoration of fibres that are only diseased. The world generally is acquainted with the startling phenomena afforded by the infusion of this fluid into animal structures, and is eager in its inquiries why we do not employ it to remove some of the opprobria that still disgrace our practice. We are upbraided for our remissness in prose, and satyriized in poetry for our culpable inertia.

* * * * * Galvanism has set some cases grinning,
But has not answered like the apparatus
Of the Humane Society's beginning
By which men are unsuffocated gratis.

It being admitted that this modification of electricity is capable of substituting in some manner and measure that principle, whatever it is, which ordinarily acts through the nerves, it is legitimately inferable that it may be converted into a most energetic therapeutic agent. That it has not insinuated itself into general practice, is probably owing part to the obstacles always set up before every new article, and also from the timidity, arising from a knowledge of its potency, which deters from its employment. Prudence in the use of any new and especially a very active agent of the *materia medica* is unquestionably commendable; however, whilst temerity is to be deprecated, assuredly that timidity which would refrain from rational experiment when opportunity is presented, and when neither risk or injury is to be hazarded, and where beneficial results are confidently to be hoped, is not only despicable but highly criminal against the best interests of humanity.

Public receptacles of the sick yield advantages, facilities and privileges, to innovate and improve remediate means unenjoyed in private practice, and it is undoubtedly the duty of the medical officers of these institutions to cultivate the resources of science, and offer the fruits to the acceptance of the profession. With these impressions the following cases are presented, and also in the hope that they may perchance emit some additional light upon the qualities of this new article of the materia medica, or perhaps suggest some slight clue to unravel the still bewildered pathology of one of the most distressing of our nervous affections.

CASE I. *Paraplegia*.—Michael Mullen, an Irishman, twenty-six years of age, was admitted, June 12th, 1833, with paraplegia. He says that until about a year since, when he was attacked with fever and ague and the subsequent paralysis, his health had always been good; that his athletic powers had uniformly been adequate to the procurement of his subsistence by hard labour; and that since his arrival in this country he had been chiefly employed upon our roads, canals, and other public works, where he received full wages as an able-bodied hand. He is very pale, and although of the sanguine predisposition, his countenance exhibits the blank expression of want of hope; he is greatly emaciated, suffers occasional returns of chills and fever, and in the intervals his temperature, and especially of the lower extremities is below par; his appetite is precarious; bowels torpid; tongue small, sharp, and slightly furred; pulse frequent, small, and weak. There is a considerable distortion of the spine, presenting the appearance of a well-defined tumour of three inches diameter at the base and about one inch and a half in height with a scale on the apex. From this tumour there is no discharge of pus, sanies or other fluid. Its location is at and over the fifth and sixth dorsal vertebræ.

He is incapable of giving any account of the origin of his hunch, “for,” says he, “it has been there ever since I can remember, and long before, and may be was born with me.” He avers that it never occasioned him any pain or other inconvenience, until during his confinement by the fever last year, when for the first time he began to experience soreness and pain in the part, but which was at the time attributed to the erosion and inflammation arising from his position in bed and the undue amount of friction made upon it as the most prominent part. With the progress of the ulceration of the hunch he perceived a gradual diminution of sensibility and motion of the lower extremities until it terminated in an entire loss of both sensation and motion. The paralysis is now so complete that he can feel neither pinching, puncturing, cauterization, or any other stimu-

lating contact; nor can he by the utmost effort of volition contract a single fibre of any muscle of the lower extremities. He distinctly recollects that during the subsidence of the powers of his inferior half, he occasionally suffered pains of various and indescribable kinds in his back, sides, hips, thighs, &c. and although much less frequent and intense, they still torment him in the pubic and iliac regions, and also along the upper part of the spine. Doubtless, a portion of this suffering is attributable to the condition of the bowels, because it is always greatest where they are constipated.

His rectum and bladder still acknowledge their alliance to the dominion of his will.

It does not appear that his alimentary tube and its collatitious viscera have sustained any impairable injury, although they are all evidently indolent, and require occasionally to be urged to duty. The fever, a tertian intermittent, has never been subdued, and seems merely to acquiesce in a reluctant truce.

We are unable to extract from him any satisfactory information as to the treatment which he has undergone. Almost the only things of which he declares he is very certain, is, that he has taken a great deal of mercury; has been salivated more than once; has taken a great deal of Queen Ann, (quinine;) has been repeatedly blistered; "and swallowed a heap of doctor-stuff more."

Our attention was first directed to the removal of the intermittent, which was readily accomplished by obviating the torpor of the viscera, interrupting the habits of the disease, and corroborating the assimilating apparatus. All this was effected by the ordinary means in about a fortnight. Having reëstablished order amongst the nutrient organs, we next began to institute efforts to repair the locomotive machinery.

Believing the paraplegia to have arisen from an inflexion of the spinal cord from its ordinary line of direction, by alteration of structure resulting from the fever, and also in part from the long continued pressure of the body upon the more protruded portion, by which a permanent compression on the medulla spinalis had destroyed the function of the lower part, and consequently the nerves passing off from it to the inferior extremities: therefore to obviate this mechanical cause of the disease, he was placed upon an inclined plane, so adjusted as to support the upper half of the body, and allow the lower parts to be freely suspended by their own weight. This position was soon found to afford him very great but undefinable relief. He seemed solicitous to express the kind of benefit derived from this

new situation, but failed in words to communicate his ideas. It was not a relief from pain, because the parts were incapable of suffering; nor was it a restoration to pleasurable sensation, because they still remained insensible; but it was a feeling of liberation from confinement without the power of exerting or enjoying liberty; a satisfied freedom from constraint without the disposition to action.

Free as the nerves now evidently were, they continued inert. Hoping to stimulate them to a resumption of official acts, various plans were instituted, and nearly every proposed remedy was tried, yet all were unavailing, except so far as that under these varied prescriptions; regard was had to the preservation and perfection of his general health, which continued improving, and the ulcer upon the apex of the curve of the spine cicatrized pretty firmly.

Having exhausted all the ordinary resources of art, and still believing that if by any agency the nervous power could be reinstated or determined to flow in its former channels, locomotive life might be restored to the paralysed limbs, and knowing the effects produced by galvanism in many physiological experiments, and that it had been suggested as a remedy in affections of this kind, we prepared for its administration.

September 6th. Having during the night procured vesication to the desired extent upon the back of the neck and on one of his legs, the galvanic apparatus was applied.

The mode of application although not new, may not perhaps be familiar to all. It is this: remove a portion of cuticle by means of a blister from two portions of the body on which it is designed to act, sufficiently large to afford a basis on which to place the piles; these are composed of a flat piece of sponge, an equal portion of fresh muscle, of beef, mutton, pork or other butcher meat, and the metallic plates, one made of silver and the other of zinc. These plates are elliptical, the ordinary diameter about two inches, the conjugate about one and a half, they are made button fashion with an eye in the centre, for the convenience of attaching the connecting silver wire. On the denuded surface place the sponge saturated with a solution of common salt in water, over the sponge place the layer of muscle, and upon the muscle place the plate, into the eye of the plate fasten one end of the wire, then confine the whole firmly upon the part by bandages or adhesive strips. The silver plate is to be placed nearest to the origin, and the zinc one at the termination of the nerve.

In a very few minutes after the adjustment of the apparatus, we were gratified with the observation of a remarkable alteration in the state

of the circulation, and the temperature of the paralysed limbs. The pulse which had fluctuated between 96 and 112, became pretty stationary at about 88.

The temperature which previously had been as low as 62° of Fahrenheit's thermometer, in a very brief space of time arose to 89°. At first the galvanic apparatus was applied and retained two or three times a day, and for only half an hour at a time. Finding that the temperature, circulation, and general sensations were always greatly improved during the application, and that in the intervals some portion of the good effects were lost, it was afterwards kept in pretty continuous operation. In a few days we were cheered by a very obvious amendment, his sensibility in the hitherto insensible parts began to dawn, and the mobility, although very slight at first, soon became very obviously perceptible.

18th. Galvanism continued; alternately shifting the zinc pole from leg to leg. The strength, especially about the loins, is decidedly increased, insomuch that he is able to aid in the change of position.

It may not be unworthy of note, that shortly after the resort to galvanism, and after the patient began to give utterance to reviving hope of recovery, to determine how much of his improvement might be attributed to his faith in the novel expedient, and how much might rightfully be accredited to the galvanic fluid, we inverted the poles, without the patient's knowledge, when he immediately began to respire with great anxiety, and complain of an inversion of all his bowels threatening suffocation, or as he expressed it, "a rising up from the bottom of his belly into his throat, and bringing on a sickness of heart." He became very importunate to have the plates removed, as they gave him a great deal of a new kind of pain, and declared that they had never before effected him thus, and that if they were not instantly taken off they would kill him. Fearful of carrying the experiment too far, yet without any intimation to him, they were restored to their former situations, when he instantly desisted from his complaints, and stated that every thing was right again.

23d. Owing to the absence of the student who had the especial care of this case, for three days past the galvanism has been discontinued, and the patient has evidently retrograded. He now complains of coldness of the legs, general uneasiness, and loss of appetite. Renew the blisters, and then reäpply the plates as heretofore.

26th. Is again better.

28th. The heat of his limbs has been gradually increasing since the last application, and is again at 89°, which seems to be the maxi-

mum point. His strength is also returning, and is nearly equal to what it was before the discontinuance of the galvanism.

October 1st.—The plates are retained on day and night, with the most obvious advantage in every respect.

8th. The plates have been kept on constantly, except the short periods requisite for refitting. The mobility of the limbs has so much increased that he can throw them about with great ease.

22d. The recent atmospheric vicissitudes have induced a catarrh, from which he suffers considerably. He has pain in the side, stitches in the breast, and great soreness of trachea in respiration. R. Sulph. magnes. ℥iss., Antim. tart. gr. iij., Aq. pur. ℥viiij. M. c. coch. j. o. h. ss. donec. alv. resp.

23d. In the morning no better; but after the medicine had operated freely, he was much relieved. In the evening there were symptoms of considerable irritability. R. P. Ipecac. comp., Prot. chlor. hydrarg. āā. gr. x. M. c. h. s.

24th. He rested well, but the medicine not acting upon the bowels, he experiences tenderness of gums. R. Ol. ricini, ℥iss.

25th. The oil did not act well. The pain however is removed, and he breathes freely. His only complaint is soreness of mouth.

26th. Mouth a little better: no pain. There still exists some irregularity in the bowels, for which he was ordered the Pulv. ipecac. comp. gr. x., which fully answered the indication. The galvanism has been discontinued since the 21st, but is now resumed.

30th. Mouth is now nearly well. His limbs are growing much stronger, and his improvement in every way is rapid, and especially so, as he declares, since his sore mouth began.

November 8th.—Since the last date he has been trusted alone to the inclined plane, and the tonic powers of a cold infusion of chamomile and quassia.

22d. In consequence of a sensation of rigidity in the gluteal muscles, he has been ordered the warm hip-bath. During the months of December and January he was permitted to walk the apartment as much as his strength would enable, and in every respect to deport himself at discretion.

February 1st.—It is not yet thought proper to discharge him from the hospital, lest the inclemency of the season should be too severe for his recently regained powers; hence he is tolerated as an invalid at large.

March 1st.—He continues an inmate of the hospital, but is so well as to require no further medical attention, and it is hoped that on the

return of the genial season he will be able to resume his usual avocation.

CASE II. *General paralysis*.—The next case was that of Anthony Simmons, a black boy, about sixteen years old, an apprentice to a barber, who was admitted with general paralysis of several months duration. His master informs us that he had been originally a very healthy and athletic lad, and that he is ignorant of any cause to which his disease is attributable; that it came upon him very gradually; that it excited little attention until he became unable to walk, when he was placed under the direction of his family physician, who pursued various plans of treatment until he expressed the opinion that the case was incurable. Determining to give him every chance for recovery that medicine could afford, he removed him to one of our public infirmaries, where he remained until advised to remove him to the Alms-house, to be supported at public charge until death should invade every portion of his frame.

Notwithstanding his utter helplessness, his mind is apparently sound, and his disposition even cheerful. He retains the command over the muscles of the face and neck, and can occasionally produce some slight movements of a few of the muscles of the left arm. His sensibility is not impaired, but rather perhaps increased. His bowels are obstinately torpid. His circulation is very irregular, and the pulse intermits after every second or third beat. An epispastic was applied to the nape, and his bowels stimulated into activity by reiterated portions of Epsom salt, and other of more ordinary cathartics.

In a few days he exhibited evident symptoms of amendment. His pulse became more natural, and some mobility returned to his limbs. In this condition he continued stationary for a time, when finding that he could not be made to progress by any of the older remedies, and encouraged by the experience gained in the former case, we determined to have resort to the galvanic process. Accordingly, on the 11th of December, the apparatus was adjusted to his neck and one leg.

14th. After a lapse of only three days he is so much benefited that he is able to set erect in the bed, and when taken out, and placed upon his feet, can stand alone.

23d. He continues to increase in strength and mobility. There still existing a great tendency to constipation, occasional aperients are from time to time exhibited, but without interrupting the galvanic process.

28th. He is so far recovered that he is regaining confidence in his own powers, and has asked for crutches to aid him in hobbling about the room. Treatment continued.

January 1st, 1834.—Improvement gradually and rapidly advancing.

13th. So well that the treatment is discontinued.

February.—Has been reclaimed by his master, and has gone home.

Some days after his return to his master's shop, I called to see him. He approached me with a firm step, made his obeisance gracefully, grinned a pleasant display of the ivory palisadoes, and begged that "'Tony should hab the honour of shaving Massy Docy."

We have a case of hemiplegia now under treatment, which promises a like successful termination.

These are all the cases of palsy in which this remedy has yet been tried by us. We are also experimenting with it in some other cases, whose results shall be communicated whatever they may be, and possibly we may then tax your patience with some speculative attempts at reducing our facts into the order of theory.

ART. III. *On the Pneumonia of Children.* By W. W. GERHARD, M.D.
of Philadelphia. [Part 1st.]

WITH the progress of pathology the questions to be solved increase in number, and each solution of a problem discovers new groups of facts and opens new points of view, from which well-authenticated phenomena are to be examined. As each disease becomes a subject of investigation, and the diagnosis and natural history of it are thoroughly elucidated, it is necessary to examine the peculiar forms of the affection as modified by climate, age, sex, and above all, by therapeutic means.

Pneumonia is perhaps one of the diseases the best understood; we know with nearly absolute precision its pathognomonic characters, its ordinary duration, the portion of the lung most frequently invaded; and to a certain extent, the value of treatment in the cure, or alleviation of the affection is well established. What we least know is the modifications presented by pneumonia when the disease attacks individuals who have not yet attained the adult age, which is selected as most appropriate to furnish the types of disease. We now know, it is true, that pneumonia is not uncommon amongst children, that it is not unfrequently fatal; and still further, that few persons die below the age of puberty without presenting a partial induration of the lungs.

It remains to inquire whether the disease termed pneumonia in children, is identical with the same affection in adults, and what relation any modifications of it may bear to the different ages of childhood. In short, the pathology of the disease must be studied as thoroughly in the infant as it has been in the adult, and then the conclusions must be compared with those furnished by the latter class of patients. The following observations are designed to supply in a small degree the lacuna; they were collected during the years 1832 and 1833 at the Children's Hospital of Paris, and include a series of all the cases of pneumonia admitted during more than a year into one of the two divisions of the hospital destined to the treatment of acute affections.

The number of my own observations analyzed in the first series, is twenty-four. M. RUFZ has allowed me to examine, under some points of view, sixteen cases which he had collected. Care was taken to avoid all unnecessary causes of error, by bestowing much time and attention on the examination of each case. The results obtained from the examination of these series of observations of children were entirely unexpected to myself, and therefore free from the bias of preconceived opinions.

Opinions not closely connected with facts, are least of all admissible in inquiries into the diseases of children, in which, although there are not often many complicated lesions, the diagnosis is extremely obscure from the small number of points upon which it must depend. Much more time must therefore be spent in ascertaining with accuracy the existence of the few symptoms which can be subjects of observation in children. Thus, in the class of diseases now examined, we have rarely the sputa, or the exact seat of pain, and are deprived of much of that collateral evidence which so much assists the diagnosis of the diseases of the adult. I was long since convinced of the necessity of fixing thoroughly the value of all the symptoms in diseases of children, however unimportant some of them seem when applied to the affections of adults where the great pathognomonic characters are easily recognised, hence an apparently undue weight was attached to noting the precise appearance of the countenance, of the external characters of the respiration, and other minor symptoms. No one symptom may be of itself pathognomonic, but the union of several fixes the identity of the affection, and if the disease be not sufficiently characterized, it is utterly impossible to reach any certain results as to its probable termination or curability.

I have divided all the cases which I could regard as observations of the pneumonia of children into two distinct classes. The first includes those cases of pneumonia which offered several of the charac-

teristic symptoms of the same affection in adults, such as pain, crepitous rhonchus, bronchial respiration, bronchophony, sometimes viscid sputa;—all this first series terminated in recovery with a single exception, and all were limited in their duration. The age of the subjects varied from six years up to puberty, none of the younger children presented a corresponding series of symptoms.*

The second series includes all the children who could be regarded as affected with pneumonia other than those above-mentioned; these were all young, not exceeding the age of six years, and presented a succession of symptoms very different from those observed in the pneumonia of adults. The induration of the lung was scarcely ever confined to a single one of these organs; it began by a number of detached nuclei, instead of commencing in a limited point of the pulmonary tissue; the duration of the disease was not limited, and in a large proportion of cases it terminated in death.

I have stated a few of the obvious points of difference between the two classes of observations, so that the general reasons for the classification might be seen. Upon entering into a more minute history of the two varieties, the distinction will become more obvious.

The number of cases of the first series was forty, and of these a single case terminated fatally; therefore the identity of the anatomical lesions with those of the pneumonia as observed in more advanced life, can only be shown in this single example. The very small mortality proves that this form of pneumonia which affects children after the second dentition, is not a very fatal disease; an inference which we may very safely draw even from a number of cases which are not sufficiently numerous to furnish an exact general ratio of the mortality. We know from correct observations on the pneumonia of adults, that it is rarely fatal until after the age of forty-five or fifty, and in the later stages of life its mortality is immensely increased. We may therefore state it as a law in pathology, that pneumonia, between the ages of six and fifty, is rarely fatal. These cyphers are based on the results of the Parisian hospitals.

* Of course the term pneumonia is here confined to those cases in which the affection of the lungs was the primary disease, and occurred in children who were in perfect health or at least free from any disease which could give rise to inflammation of the lungs as a mere secondary lesion. In other words the term pneumonia is given to those cases only in which the first appreciable local affection was the pulmonary inflammation. When pneumonia is a mere accidental or secondary lesion occurring during the course of a disease, such as small-pox or phthisis, the symptoms, termination and treatment are widely different from those of the primary affection.

CASE.—Charles Roger, æt. $9\frac{1}{2}$, admitted March 20th, 1833. On the morning of the 18th he was taken with fever, cough and pain in the side, the fever augmenting in the evening. Cephalalgia, but neither vomiting nor diarrhœa. Well-nourished, eats at the table of his master; does some light work in a paper manufactory. Health perfectly good before the 18th.

Present condition, March 20th, 6 P. M.—Hair dark-brown, eyes dark, skin brown, moderate embonpoint. Countenance anxious; strong dilatation and movement of the nostrils; lips swollen, dark-red; large circumscribed purple spots on each cheek; eyes brilliant, slightly injected; decubitus dorsal, inclined to the left; intelligence dull; stupor constant; frontal cephalalgia; no delirium; senses seem perfect; subsultus frequent in the tendons of both forearms; tongue yellow, thickly coated; no pain in the throat; appetite for apples and bread; thirst; abdomen hard, distended, and throughout tender on pressure; no typhoid spots; no nausea; one dejection; respiration high, irregular, forty-seven in the minute, heard at a distance; pulse 132, quick, irregular, not very strong; cough rare; pain in abdomen and lower part of right side of the chest increased by the cough; skin hot and dry.

21st, morning. Pulse 132, irregular; respiration 40; same countenance; left cheek less coloured than the right; stupor; respiration in the base of the right side, scarcely vesicular, without expiration, but obscure and not expansive, although not bronchial; no rhonchus; on left side respiration pure and expansive; percussion slightly obscure throughout the left side; eight leeches to right side of chest, followed by a cataplasm; gum linctus; mucilaginous enema; diet; pain diminished a little after the application of the leeches, without amelioration of the pulse or other symptoms; in the evening same symptoms.

On the 22d. Flatness on percussion in the whole posterior part of the right side of the thorax, and evident obscurity of sound in the anterior part; respiration scarcely heard on the right side, but not bronchial and pure; no change occurred in the physical signs until the 26th, when the respiration was blowing, (*soufflante*,) or imperfectly bronchial in the superior third of the posterior part of the right lung; bronchial with strongly marked expiration in the middle third, and abundant crepitant rhonchus at the base. On the 27th, fine crepitus in the whole posterior part of the right, except the subscapular fossa; the crepitus extends into the axilla, where it ceases abruptly; respiration pure in the left lung, except posteriorly a little below the middle, where a mixture of mucous sibilant and subcrepitant rhonchi are heard; mucous and sibilant rhonchi in whole anterior

part of right lung; slight obscurity on percussion, but no resonance of the voice throughout the right side of the chest.

27th. Crepitus larger, approaching mucous rhonchus on the right side; crepitus distinct in lower part of left side; no change in the physical signs occurred on the 28th.

30th. Abundant liquid mucous rhonchus in the whole extent of the right side; same rhonchus, but less abundant and less liquid in left side. Percussion not changed from last date. Decubitus variable, generally dorsal, apparently equally possible on either side. Cough frequent and loose during the whole disease. Sputa observed from the fourth to the eleventh day of the disease; viscid; in part rust-coloured, and afterwards of a dirty yellow colour, with streaks of pure blood. Pain in the side not complained of after the eighth day. Respiration always high and irregular, from 40 to 50 in the minute, excepting on the seventh, eighth, and ninth days, when it varied between 24 and 36. Pulse 132, not varying a single pulsation either on the morning or evening visit, until the seventh day, when it fell to 108, afterwards gradually rising to 120 on the eve of his death. On the last day too frequent and feeble to count. Heat constantly elevated and dry. Feebleness extreme through the whole duration. The stupor noted at first continued increasing until death. Cephalalgia not felt upon the increase of the stupor, (after 27th.) The sight was not evidently impaired, but eyes habitually closed, and painful if exposed to light. Hearing preserved. Intelligence obtuse; great irritability if disturbed, but answers correct until the day before his death. Slight delirium at times, not constant. No subsultus after the day of entrance. Sleep bad the last three or four nights only. Tongue whitish, afterwards yellowish, except at edges, which were dark red until the tenth day; afterwards dry, dark yellow at centre, and red at the edges and swollen. Teeth fuliginous after the tenth day, and gums where attached to the incisors of both jaws softened, and of brownish, gangrenous appearance the two last days. Breath fetid on the ninth day, becoming of a gangrenous odour towards the close. No vomiting until the fifth day, when he began taking a potion containing tartarized antimony. The same potion was continued until the eleventh day, without exciting either nausea or vomiting; on the last day frequent vomiting of a dark, slightly flocculent liquid. Stools rare until the first dose of tartar emetic, when there were two or three liquid dejections; afterwards the constipation returned. Abdomen not tender, rather developed until the two last days, when it seemed painful on pressure, and tense. The countenance retained the expression of heaviness, becoming haggard as

soon as the breath was fetid. Red, irregular, but circumscribed patches on each cheek throughout the disease. Lips thick, livid, red, dry.

Death took place at the end of the thirteenth day.

The treatment consisted in two applications of leeches to the chest, (eight and six,) on the fourth and fifth day. On the sixth day, a potion was given, containing six grains of tartarized antimony, which was continued with little variation until the eleventh day. The child tolerated the antimony extremely well; almost no nausea during the whole period; on the eleventh day the vomiting of dark liquid caused the suspension of the medicine. On the tenth day the quantity of tartar emetic had been increased to eight grains in the twenty-four hours, and two cups were applied to the right side of the chest. The other applications consisted of hot applications to the extremities, injections, and the pectoral linctus. It is needless to mention, that this depletory and contra-stimulant practice was without beneficial result; the tartar emetic was perfectly supported until the supervention of the dark-coloured vomiting.

Autopsy the 2d of April, 8½ A. M. thirty-one hours after death.—*Exterior.* Moderate embonpoint. Greenish colour of abdominal parietes. Livid spots on the posterior parts of the body.

Thorax. *Right lung* adhering in its inferior half by reddish, soft cellular adhesions, (recent.) Upper and middle lobes of a delicate, rosy-fawn colour externally; tissue rosy, soft, containing air, without trace of tubercles or emphysema. Inferior lobe on its anterior half of the same aspect as the upper lobes. Posterior half of this lobe in a breadth of one and a half to two inches at the middle; yellowish-red, spotted with black patches, one to four lines in diameter, apparently owing to effusion of blood into the pulmonary tissue; cut surface finely granulated, the granulations yellowish, easily crushed, not tuberculous, the largest of the size of a pin's head. Purulent liquid issues abundantly from orifices which are easily traced to the cut bronchial tubes, and the whole tissue is friable, and breaks into reddish-yellow, puriform pulp. Bronchia rosy, and not thickened in the upper lobe; reddish, thickened, and filled with puriform liquid in the lower. *Left lung* not adherent; upper lobe fawn colour, not tuberculous, rosy internally and permeable; lower lobe rosy and permeable to the air, except in its posterior and inferior fourth, where its cut surface, density and friability, are precisely similar to those of the indurated portion of the right lung. Bronchia rosy and transparent, except in the affected part, where their contents and aspect are analogous to those of the lower lobe of the right lung. *Bronchial*

glands grayish, firm, size of large peas, not tuberculous. *Pericardium* containing one ounce of limpid serosity. *Heart* one-half larger than the fist of the child. Total height two and a half inches. From interior of apex to free edge of aortic valves, three inches seven lines. Development of left ventricle at its middle, three inches nine lines; thickness of its wall at same place, without columnæ carneæ, six lines, with them nearly ten lines. Development of aorta at valves, twenty and a half lines. Thickness of right ventricle less than two lines, height two inches eight lines; pulmonary artery twenty-two lines. Tissue of heart deep red, firm; aortic valves contracted, rigid, their usual cartilaginous concretions of the size of a millet-seed. Slight cartilaginous induration of left auriculo-ventricular valves. Eustachian valve closed. Aorta of yellowish, onion-peel colour in its internal membrane only. Heart distended with dark blood, more abundant in the left cavities.

Stomach contracted, contains a thick, blackish matter, similar to that vomited the eve of his death. General hue of the mucous membrane rosy onion-peel colour, a little opaque, without any injections. Surface very irregular from a multitude of little depressions of same colour as the rest, rounded, the largest a line in diameter, edges not perpendicular; mucous membrane at bottom so thin as to render these spots translucent, but not entirely destroyed. Membrane adherent at these spots, with slight injection of the cellular coat in a few. General thickness of the mucous tunic augmented; strips brittle, but of the usual length, four or five lines in great cul-de-sac, six or eight in great curvature, and twelve to fifteen in the small. Much mammillation near the pylorus, and a little at the central parts. *Duodenum* grayish; follicles with central point numerous; contents yellowish. *Small intestine* contains a blackish matter nearly similar to that in the stomach. Mucous membrane throughout pale, a little opaque, but consistence nearly natural; strips six to seven lines in the jejunum and ileum, except in the last five or six feet, where they are only from three to five lines. Glands of Peyer white, less reticulated than usual. Isolated follicles visible in last three feet, less than millet-seeds; some with central point. *Mesenteric glands* small, grayish, firm, not tuberculous. *Large intestine* containing throughout the same blackish matter as the small intestine. Mucous membrane throughout pale, a little milky; isolated follicles just visible, in general with central point. Strips eight to twelve lines, firm. *Liver* flaccid, dull-gray colour; the two substances little distinct, greasing the scalpel a little. Bile green, rather abundant. *Spleen*

four inches long, reddish-brown, firm. *Kidneys* dark-coloured in the tubular portion, cortical substance violet-gray. *Bladder* a little injected at the fundus, firm, containing a little troubled urine.

Head. Pia mater a little injected; about half an ounce of serosity beneath the arachnoid, and a drachm in each lateral ventricle. Substance of brain firm, not injected. Spinal marrow firm and pale.

Mouth. Gums softened in whole extent corresponding to the incisor teeth, of a dirty-gray colour and gangrenous odour.

I have given the details of the only mortal case amongst the subjects of the first series, to show the perfect identity both of symptoms and lesions, with those presented by fatal cases of the pneumonia of adults. The right lung, which was primitively affected, presented the granulated, indurated, but friable structure of an inflamed lung, between the second and third stages, that is, the degree intermediate between the red and gray hepatization. The pleura was inflamed on the side most affected. The extent of the lesion was not so great as in many cases which terminated happily, and perhaps this observation would not have had a fatal issue, were it not for the lesions of other organs. The stomach was evidently much altered. Had the tartar emetic any agency in the production of this lesion? at least the increased dose coincided with the exacerbation of the symptoms. The gangrene of the mouth was a very unfavourable symptom; this affection supervenes in a large number of children labouring under various diseases, and usually it has a mortal termination. The child's health previously to the commencement of the pneumonia was good, excepting an affection of the heart, which was shown only on dissection.

I have arranged the cases whose issue was fortunate in a tabular form, which will include some of the leading symptoms in each case, especially such as were necessary to characterize the disease so clearly as to render the diagnosis perfectly free from doubt. Some such arrangement is adviseable to remove all suspicion of involuntary errors to which an author might be exposed, and these details render all wilful deception morally impossible, from the much greater skill and labour necessary to invent and adapt together so great a number of imaginary details, than would have been requisite to examine and record facts. The table might have included all the data sought for, were it not for the obvious typographical inconveniences, which oblige me to give the simple analysis of many symptoms.

Name. Age. Sex.	Duration.	Month.	Expectoration.	Physical Signs.	Pulse.	Respiration.	Treatment.
1. Pageault, æt. 7. Male.	14 days. Entered 7th day.	September.	None.	Bronchial respiration; bronchophony; flatness on percussion in whole of right side; posteriorly crepitus from eighth to twelfth day.	140 at entrance, falling to 84; regular, quick.	50 to 60 per minute, at convalescence 30 to 36.	Venesection, 8 ounces on 9th day; 6 leeches on 10th; sinapisms; gum linctus, &c. No treatment before entrance.
2. Ferrari, æt. 11. Male.	12 days. Entered 8th.	January.	None.	Rude respiration or imperfect bronchial on right side, with crepitus two last days.	132 at entrance, afterwards 80 to 88.	36 at first, afterwards 22 to 28.	Diet and mucilaginous drinks.
3. Chotard, æt. 7. Male.	Entered 5th day. Left hospital on 8th. Convalescent.	March.	None.	Strong bronchial respiration in inferior two-thirds of left side. Crepitus and sub-crepitant rhonchus on eighth day.	96, full, afterwards 72.	30; on last day 24.	Not noted.
4. Mallard, æt. 9. Male.	13 days. Entered 3d day.	September.	None.	Bronchial respiration in whole posterior part of left lung. Crepitus at intervals in middle of lung.	120 at entrance, falling to 70; quick and small.	40 to 50; diminishing to 30.	Venesection, 6 ounces on 4th day; gum linctus and emollients; diet.
5. Prudhomme, æt. 9. Male.	Developed in hospital. Removed.	December.	None.	Bronchial respiration on right side superiorly, and throughout left, with some crepitus.	124, quick.	50 to 60.	Six leeches to chest, and two applications of scarified cups.
6. Bay, æt. 7. Male.	15 days. Entered 7th day.	December.	None.	Bronchial respiration, and afterwards crepitus in left side of chest.	120, reduced to 56.	40 at entrance, afterwards 22.	Not noted.
7. Landry, æt. 10. Female.	11 days. Entered 5th.	September.	Whitish; rare.	Bronchial respiration in lower part of right lung. Flat sound on percussion. Crepitus afterwards.	124, in last days 70.	52, diminishing to 20.	One application of 20 leeches; demulcents and diet.
8. Marquetti, æt. 16. Male.	24 days. Entered 3d.	January.	Viscous, afterwards rust-coloured.	Bronchial respiration in whole posterior part of right lung, and lower lobe of left. Bronchophony, flat sound, and crepitus.	100 to 114, in latter stages slow, 70 per minute.	43, in convalescence 20.	Venesection, 8 ounces; four applications of cups, and a blister; 6 to 8 grains of tartar emetic daily.
9. Diancourt, æt. 6. Female.	20 days. Entered 10th.	April.	None.	Bronchial respiration in middle and upper back part of both lungs; flatness and crepitus.	156, quick, falling to 76.	52, in convalescence 24.	Venesection, 6 ounces; sinapism to chest; demulcents and diet.
10. Geberty, æt. 10. Male.	8 days. Entered 2d day.	October.	None.	Bronchial respiration and bronchophony in upper posterior two-thirds of right lung; crepitus in lower third. Slight crepitus and rude respiration in middle third of left.	96, after third day 70 to 80.	40 at first; 30 to 20 afterwards.	Venesection, 6 ounces on 3d day; 3 cups on 4th, 2 on 5th; gum linctus; demulcents.
11. Puy, æt. 11. Male.	11 days. Entered 1st.	January.	None.	Strong bronchial respiration in	124 at entrance,	52, afterward	Two cups to right side; de-

				<i>Physical Signs.</i>	<i>Pulse.</i>	<i>Respiration.</i>	<i>Treatment.</i>
12. <i>Sauy</i> , æt. 9. Male.	December.	18 days. Entered 3d day.	None.	Bronchial respiration and bronchophony in upper posterior part of left lung; crepitus in lower lobe. Slight sub-crepitus in lower lobe of right.	132 to 68, at last irregular.	56, at convalescence 16.	Two cups to left side, dry cups, idem; opiates and demulcents.
13. <i>Chaudain</i> *, æt. 6. Male.	March.	13 days. Entered 4th day.	None.	Bronchial respiration in lower two-thirds of left side, and rude in upper third; crepitus. Some crepitus in right lung.	132, at discharge 100.	47, afterwards to 24.	Eight leeches to base of left axilla; dry cups; blister; opiates and demulcents.
14. <i>Legay</i> , æt. 11. Male.	March.	17 days. Entered 7th day.	Rare, yellowish, and viscous.	Flatness on percussion in whole posterior part of the right side. Bronchial respiration and bronchophony. Crepitus.	135 to 80.	44 to 22 at convalescence.	Venesection, 8 ounces; demulcents; diet.
15. <i>Vidal</i> , æt. 15. Male.	January.	15 days. Entered 3d.	Whitish, viscous, afterwards brownish.	Flatness on percussion on right side, especially in the inferior posterior part of the lung.	128 to 90.	37, then up to 56, falling to 25.	Venesection, 8 ounces; dry cups; tartarized antimony, 5 to 8 grains in the 24 hours. Diet.
16. <i>Chalumeau</i> , æt. 13. Male.	February.	14 days. Entered 4th.	Transparent, mucous—not viscous.	Flatness on left side. Bronchial respiration in middle parts of both sides, especially the left. Crepitus.	128, quick; at termination, 72.	35 to 24, high.	Twelve leeches to chest; 2 cups to left side; slight opiates; demulcents.
17. <i>Briant</i> , æt. 10. Male.	March.	16 days. Entered 5th day.	Whitish, mucous.	Flat sound in whole posterior part of the right side. Bronchophony, bronchial respiration and crepitus in same part.	120, quick, afterwards 84.	52, irregular at first; down to 24.	Tartarized antimony, 6 grs. in the 24 hours for six days; demulcents, cataplasms afterwards.
18. <i>Aubert</i> , æt. 7. Female.	April.	11 days. Entered 4th day.	Rare, whitish.	Flat sound in whole of right side. Bronchial respiration; fine crepitus. Bronchophony in lower two-thirds of the right lung posteriorly.	130 to 100 in convalescence. Fever from erysipelas.	72, high and irregular; at convalescence still 30 to 40.	Cataplasms to chest; demulcents; sinapisms to legs, and blister to side affected.
19. <i>Vuli</i> , æt. 12. Male.	December.	11 days. Entered 6th day.		Bronchial respiration and crepitus in the upper part of the right side.			Venesection, 12 ounces at entrance; demulcents afterwards.
20. <i>Bourdot</i> , æt. 14. Female.	January.	Entered 5th day.	None.	Bronchial respiration and bronchophony in the upper two-thirds of the posterior part of the left side. Crepitus inferiorly.	140 at entrance.	45 and irregular at entrance.	Venesection, 8 ounces on 6th day; repeated on 7th; tartarized antimony.
21. <i>Condenime</i> , æt. 12. Female.	February.		None.	Bronchial respiration. Flat sound. Large crepitus in lower two-thirds of the left side.	120, afterwards 84.	40, irregular to 30, regular.	

* This child had for a long time a chronic enlargement of the glands of the neck, and tubercles probably existed in the lungs; certainly in the bronchial glands.

To this table are to be added three other observations which I collected at the Children's Hospital: from accidental causes, parts of these observations were mislaid; the portions which remain are sufficient to characterize the disease, which was cured in both the remaining cases.

NAME.	MONTH.	PHYSICAL SIGNS.
No. 22. Boy, æt. 8.	March.	Flat sound, bronchial respiration and crepitus in the left side inferiorly.
No. 23. Boy, æt. 15.	November.	Bronchial respiration, bronchophony and crepitus, with flat sound in lower two-thirds of the right side.

The preceding cases are all those of which I have myself preserved notes, but one of the whole number, (twenty-four,) was fatal. A few others, the notes of which were either not collected or lost, would have a little increased the number of observations of cure.

The following table is drawn up from the cases collected by my friend M. Rufz during the same time that I was myself engaged in observing the patients at the Children's Hospital; M. Rufz was occupied in another ward of the same institution. The test of pneumonia in all these cases was the existence of bronchial respiration, crepitus, bronchophony, and a flat sound on percussion occurring in subjects healthy or nearly so; the symptoms in all came on suddenly, and could not therefore be confounded with a tuberculous affection of the lungs, and much less with pleuritic effusions.

<i>Sex and Age.</i>	<i>Duration.</i>	<i>Month.</i>	<i>Side Affected.</i>	<i>Treatment.</i>
No. 1. Girl, æt. 6.		October.	Right.	White oxide of antimony.
No. 2. Girl, æt. 12.	45 days.	March.	Right.	White oxide of antimony.
No. 3. Girl, æt. 8.	13 days.	September.	Right.	Venesection; repeated. Leeches.
No. 4. Girl, æt. 9.	14 days.	June.	Right.	Venesection. Demulcents.
No. 5. Boy, æt. 10.		May.	Right; upper lobe.	White oxide of antimony.
No. 6. Boy, æt. 14.	12 days.	April.	Right.	Venesection twice.
No. 7. Boy, æt. 6.	12 days.	April.	Left.	Venesection twice.

(Table continued.)

<i>Sex and Age.</i>	<i>Duration.</i>	<i>Month.</i>	<i>Side Affected</i>	<i>Treatment.</i>
No. 8. Boy, æt. 14.	11 days.	April.	Right.	Venesection.
No. 9. Boy, æt. 12.	12 days.	April.	Right.	Venesection twice.
No. 10. Boy, æt. 7.		April.	Right.	
No. 11. Boy, æt. 12.	9 days.	October.	Left.	No venesection nor antimony.
No. 12. Boy, æt. 14.	12 days.	August.	Left.	Venesection.
No. 13. Boy, æt. 13.	11 days.	May.	Right.	Venesection repeat- ed several times.
No. 14. Boy, æt. 15.	23 days.	May.	Left.	Venesection; re- peated.
No. 15. Boy, æt. 11.	13 days.	May.	Right.	Venesection.
No. 16. Boy, æt. 12.	14 days.	April.	Right.	

The treatment is not given in detail, it was our intention at the time the table was made out, merely to examine the duration of the disease as treated with or without bleeding and the antimonials. The list includes all the cases observed by M. RUFZ, who did not witness a single fatal case. The patients enumerated in the table made out from M. RUFZ's observations, were treated by MM. GUERSENT and BAUDELOCQUE, the cases collected by myself were from the wards of MM. JADELOT and BONNEAU. The whole number amounts to thirty-nine successful, and one fatal case. In other words, in the whole Children's Hospital during the year 1833, and a part of 1832, forty cases of pneumonia occurring in children from the age of six upwards were observed, and of this number but one was mortal. The patients were not selected, but were treated by all the different physicians of the hospital, and were observed at all seasons of the year, so that the ratio of one mortal case in forty is based upon the greatest possible variety of patients, seasons and methods of treatment; and the proportion must represent the general law as exactly as it can be deduced from a moderate number of cases. In private practice the mortality should be even less considerable, because the patients sent to an hos-

pital, and especially to the children's, were such as presented disease of a severe form, that is, they were generally selected from amongst the whole mass of the poorer children affected with any one disease. It must also be recollected that neither simple bronchitis nor pleurisy are included in the tables which are confined to the cases presenting undoubted evidence of the existence of inflammation of the pulmonary parenchyma; that is of a more severe disease than some of the affections which are occasionally confounded with pneumonia. The necessary conclusion from these facts is, that pneumonia in children above the age of six years, either healthy or but little diseased, is rarely fatal. Of course this proposition is based upon the cases treated at the Children's Hospital, it remains for us to examine the apparent modifications produced by the different therapeutic means that were employed.

The sex of the children was noted in each case, but it was only during the last nine months of 1833, that the cases were collected simultaneously in the two divisions of the hospital; the relative numbers for this time are twelve boys and four girls, or three to one. In adults the number of men affected with pneumonia is greater than that of women, but the difference is less considerable than in children.

The seasons of the year are noted in the tables. The forty cases occurred in the following months. January, five; February, two; March, seven, including the fatal case; April, eight; May, four; June, one; August, one; September, four; October, three; November, one; December, four. In the three spring months nineteen cases were collected; in the winter months eleven; in autumn eight; and in the summer but two. The particular months most favourable to the production of pneumonia were April and May; those least favourable were July, in which no case occurred, June and August, in each of which there was but one example. This result is similar to that obtained amongst adults.

Age.—The youngest in the tables were six years of age; a single patient had reached the age of sixteen. The mean age for the twenty-four cases which I collected was a fraction less than ten years, the average of the sixteen cases of M. Ruz a fraction less than eleven. The whole number gave an average of ten years and a third; had the fractions of years been estimated in the calculations of the ages, the mean number would have been about eleven; a result showing that pneumonia becomes more frequent as we approach the age of puberty.

Duration.—I had sufficient data to establish the beginning and the termination of seventeen of the cases of recovery. The com-

mencement of the disease was not dated from the first precursory symptoms, such as restlessness, cephalalgia, or other uneasy sensations, but from the pain in the side, chill, or severe cough, which in every case came on suddenly, so as to render the proper commencement of the affection very distinct from the *prodromes*. The termination was fixed at the complete disappearance of the physical signs, that is, after the cessation of the secondary crepitant rhonchus, which succeeded to the bronchial respiration and bronchophony. The cessation of physical signs of the disease affords the most simple and easy means of marking out a limit for the disease; the general symptoms did usually not continue as long as the physical signs. The mean duration of the seventeen cases collected by myself, in which the commencement and termination of the symptoms were ascertained, was nearly fourteen days and a third. Of thirteen cases from the series of M. Ruz, the mean duration was a little more than twelve days and a sixth. This difference did not depend on the greater age of most of the patients observed by M. Ruz, for the duration of the pneumonia in the eight children below the age of ten years, whose cases are included in the seventeen observations of the first table, was fourteen days and three-eighths, or but a little longer than the mean duration of the whole seventeen cases. It is then obvious, that a cause of the difference must exist, other than the mere inequality of the ages. This cause can scarcely be found in the seasons of the year, for the cases collected in both tables were not confined to any particular season. There remain but two ways of accounting for the difference in the results, the one is by supposing that the convalescence in the two series was not dated at the same period of the affection; the other is by referring the inequality of time to some difference in the treatment. In my own observations the date of convalescence is fixed at the disappearance of the sub-crepitant rhonchus, which usually succeeds the bronchial respiration of pneumonia; in those of M. Ruz the tables were drawn up by us at Paris, and the same cessation of the sub-crepitus was regarded as the conclusion of the disease; still from a less rigorous exclusion of the doubtful signs of disease, the termination was probably placed a little earlier than in the cases which I had collected myself, and which I examined more at leisure. The difference from this cause is, however, extremely small, not exceeding a day at most, and probably the average would be only a fraction of a day. The remaining cause of the difference in duration must be sought for in the various treatment pursued; the influence of the therapeutic agents will be examined in one of the following pages.

The lung primarily or exclusively affected with the inflammation, was the right in twenty-six cases, and the left in twelve. In two subjects, both lungs were nearly equally affected. The greater frequency of inflammation of the right than of the left lung seems, therefore, still more considerable in children than adults.

The *sputa* of children are so rare, that this sign is of little or no value in the exploration of their diseases; the few cases in which expectoration occurred are noted in the table.

The *physical signs* of course existed in every case of pneumonia which I have analysed, or rather I regarded no subjects as certainly affected with pulmonary inflammation, unless they presented the physical signs—crepitus, bronchophony, bronchial respiration, and flat sound on percussion. Fine crepitant rhonchus existed in no case without the bronchial respiration, and I met with no other case at the Children's Hospital, amongst the older children, in which the general symptoms of pneumonia and the crepitant rhonchus existed together, without bronchial respiration. This coincides with what is observed in adults; M. Louis stated to me, that he had not, upon examining the observations collected by him during his clinical courses at La Pitié, found any case of pneumonia without bronchial respiration. It would appear, therefore, that the bronchial respiration in pneumonia is at least as constant as the crepitant rhonchus. It is scarcely necessary to mention, that bronchial respiration, bronchophony, and diminished sonorousness of the chest must always coëxist; in the cases in which each of these signs is not enumerated, some accident had caused the omission. The identity between the physical signs of pneumonia is perfect, except that the crepitus is generally larger in children, and if for a short time not heard, it may be generally reproduced by making the child cough, when the crepitus is again heard in the strong inspiration that succeeds the cough, giving rise to a sound like the crackling of a quick-match.

The *pulse* was always frequent during the early periods of the disease, and became slower as convalescence approached. The relative frequency of the pulsations is indicated in the table.

The *respiration* affords a better test of the degree of the pulmonary affection, than the pulse. It is besides much more easy to count the number of inspirations and examine the movements of the respiratory muscles, than it is to ascertain the frequency of the arterial pulsations, especially if the child be at all restless and irritable. The table will show, that the number of inspirations in the minute was in one case 72, in others it varied from 30 to 50, but always decreasing during convalescence to the normal standard, which in chil-

dren of this age during convalescence, or in health, is from 20 to 24. Besides the increased number of inspirations, the respiration presents other alterations in pneumonia, it is high and abrupt; this abruptness is particularly shown during the inspiration which comes on suddenly, before the expiration is as prolonged as it is in health.

The last column in the tables contains a summary of the treatment. The particular remedies are not mentioned, but each venesection or application, either of leeches or cups is noticed; the other remedies of apparent activity are also noticed. I shall attempt the analysis of the cases, with reference to the mode of treatment pursued in each, compared with the duration of the disease. Sixteen cases in the first table include a note of the treatment, and a statement of the duration of the disease. In one-half of this number of patients blood was taken from the arm; the other eight, with three exceptions, were cupped or leeches upon the side affected. The duration of pneumonia in the eight patients who were bled from the arm, was fifteen days and a half, that in the other eight, was thirteen days and one-eighth; the latter number approaches the cypher of duration deduced from the second table. But nearly all the patients whose cases were collected by M. Rufz were bled, and generally much more copiously than the patients whom I had myself observed; and the shorter duration of the disease in a part of the cases of the first table could not have been owing to the omission of venesection. The mode in which venesection was practised, was not however the same in both cases. M. Guersent, in whose wards most of M. Rufz's cases were collected, is in the habit of ordering more copious and more frequently repeated bleedings than either M. Jadelot or M. Bouneau, whose patients I had observed; however questionable the propriety of free blood-letting may be in most of the diseases of children, in the form of pneumonia which I am at present examining, the larger abstractions of blood seem to have had a happy influence. In the cases of the first table the bleeding was confined to the more severe forms, and was not frequently repeated; but in the second series of cases, venesection was resorted to in most instances, whether the disease was severe or mild, and when requisite the bleeding was repeated more than once. The immediate effects of the venesection in each case were to relieve to a certain extent the more troublesome symptoms, such as the cephalalgia, restlessness, and dyspnœa; in no case did it seem to produce an immediately injurious effect. The conclusion would then be, that although pneumonia, whether treated actively, or merely by topical blood-letting and demulcents, is rarely fatal in children above the age of six years; still, more copious vene-

section shortens, to a certain extent, the duration of the disease, and relieves the most harassing symptoms. This conclusion is nearly analogous to that which M. Louis has deduced from the analysis of his cases of pneumonia in adults. No exact tables have yet been given of the comparative mortality of pneumonia treated with or without bleeding. It is true, a physician, in cases of severity is not justified in omitting venesection; but cases occur not unfrequently in which patients have either not been seen by a physician, except towards the termination of the disease, or in which some peculiar circumstances have prevented their medical attendant from resorting to the use of the lancet. Whether the mortality be much diminished or not by blood-letting in pneumonia, it is not the less important to resort to it as a means of shortening the affection, and of diminishing the severity of the most painful symptoms.

In several cases the preparations of antimony, given according to the Italian method in large doses, were tried. The disease was not obviously shortened, and the only case which terminated fatally was treated by this method. I am very far from asserting that the tartar emetic, or the white oxide of antimony, may not be useful in children above the age of six years, who may be affected with pneumonia; but the advantage that may result from this treatment was not evident in the small number of cases in which I saw it tried. The physician who had prescribed the antimony in several cases, among which was the only fatal one, thought that the value of the remedy was shown by the successful results. This incident affords us another proof of the extreme difficulty of ascertaining the exact value of therapeutics, however clear this part of medical science may seem to many physicians.

The other remedies employed at the Children's Hospital in the treatment of this form of pneumonia, were blisters, sinapisms, with the internal administration of potions made of gum Arabic sweetened, and sometimes rendered tranquillizing by the addition of small doses of opiates. These remedies are, of course, merely designed as palliatives, and their utility is shown by the immediate relief of some of the harassing symptoms.

The preceding analysis of the cases of pneumonia occurring in children after the second dentition, includes all the details which were enumerated in the tables; these details embrace the more important points. Other symptoms are less easily analyzed, from the difficulty of eliciting the same minute details from children that are easily to be obtained from adults. The frequency of a chill at the beginning of the disease could not be ascertained, although the chil-

dren who recollected the existence of the chill could give as accurate details of its phenomena, such as shivering, and a desire to approach the fire; the absence of this symptom could not be satisfactorily established by the want of recollection, or the inattention of other patients. A chill certainly took place in the greater part of the patients, and probably in all. Pain in the side affected, occurred in every case; this pain was acute, augmented by the cough, and was generally felt at the lower part of the axilla, most frequently at the anterior than posterior margin.

The temperature of the surface was elevated in every case; in the severe examples the skin was dry and rugous, and in one case complicated with diarrhœa, the skin remained harsh and dry for some weeks after the cessation of the symptoms of pneumonia. Anorexia was constant during the early periods of the disease; the appetite was destroyed much more completely than in most other diseases of children; the dyspnœa and great anxiety destroying completely all desire of food. Constipation to a greater or less degree existed in about three-fourths of the cases; in one there was diarrhœa of some intensity.

Vomiting occurred in seven of the twelve cases in which the presence or absence of this symptom was ascertained; as in other diseases, children attacked with pneumonia are, in the majority of cases, taken with vomiting as one of the first symptoms.

The cerebral functions were altered to a certain extent in all the more severe cases; the intelligence was dull, the patient lying in a state of stupor, which nearly approached coma, even in one or two of the cases which terminated happily. It was nearly impossible to determine precisely when delirium occurred, on account of the absence of that minute observation, which is necessary to discover the aberrations of the intelligence in children. Delirium was evidently present in several cases; in others it was doubtful whether it existed.

To conclude this account of pneumonia in the older children, I shall give one of the observations analysed in the table. The observation is selected on account of the short duration of the severe symptoms.

CASE.—Landry, (Angelique,) a girl, æt. 10 years. Entered September 5th, 1833. Taken ill on the 1st with head-ache and fever, but neither chill nor epistaxis; anorexia; constipation; heat of skin; cough two days after commencement, but without pain in the side; thirst great.

Actual state, September 5th.—Moderate embonpoint; skin sallow; decubitus dorsal, but possible on either side; cheeks red, in patches; nostrils dilating at each inspiration; lips dark red, dry; intelligence

very good; no cephalalgia; senses perfect; sleep good; tongue thick, moist, clean, rather dark red; thirst great; anorexia; no dejections; abdomen not distended, not tender; urine not painful; cough moderately painful, dry; sputa whitish, very rare; pulse quick, regular, 124; respiration high, 52 inspirations per minute. *Thorax*. Resonance on percussion good in both sides of the chest anteriorly, rather less on the right than the left side; respiration on the left side, expansive, pure and without expiration; on the right less expansive with bronchial expiration at the lower part of the chest; posteriorly percussion flat in the lower part of the right side only; respiration in the left side, expansive and pure, without expiration in the right; blowing or rude with marked expiration superiorly; in the lower part of the lung respiration nearly bronchial; crepitus heard only after coughing in the lower part of the lung; resonance of the voice distinct at the lower part of the right lung; twenty leeches, one-half to the chest, the other to the epigastrium; demulcent drinks and diet.

On the 6th abdominal symptoms unchanged; sleep bad, but intelligence good; pulse 108, regular, feeble; respiration 35, less elevated; bronchial respiration in whole right side posteriorly, especially in the upper half; vibrating bronchophony at the middle third of the right lung, nearly similar to egophony. Gum linctus; gum water; cataplasms to chest; milk.

7th. Pulse 84, natural, but rather feeble; respiration 28, not elevated; appetite; no thirst; heat of skin scarcely more than natural. Crepitant rhonchus more abundant after coughing in the whole posterior part of the right side; rude respiration still distinct in the upper half.

On the 8th respiration 20; pulse 76, of natural volume. Respiration in the upper part of the right side less bronchial; crepitus still continues. Gum water; broth.

On the 12th a little crepitus was still heard about the middle of the right lung, after coughing. After the 12th respiration natural, except slight feebleness on the right side. Pulse increased in frequency to 108 on the 11th, afterwards falling during convalescence, which was protracted until the 18th, when the girl was discharged well.

This observation is the least severe example of this variety of pneumonia that I have witnessed. The effects of the application of the twenty leeches, (equal to about fifty American,) were almost immediate; the frequency of both pulse and respiration decreasing, but the local symptoms did not abate until two days later.

In the next number of this Journal I shall examine the pneumonia of children below the age of six years; this second variety differs in many respects from the affection which has just been described.

ART. IV. *Observations on Elephantiasis*. By C. W. PENNOCK, M. D.
of Philadelphia.

AMONG the numerous institutions of Paris which are devoted to medicine, no one surpasses in importance and interest the Hôpital St. Louis. This noble establishment is situated on a high eminence near the north-eastern part of the city, and was originally founded by Henry the Fourth in the year 1607 as a receptacle for the leprous. For a long period this antique structure received scarcely any attention from the foreign medical visitor. Situated far from the centre of the city, not attached to the medical school, and not presenting men of genius or industry among its clinical professors, it was considered merely as a receptacle for incurable diseases, and the student found nothing to repay him for his visit to a scene of misery and distress. It was reserved for Professor ALIBERT to change this feeling, and to place the Hôpital St. Louis among the most celebrated of Europe. This eminent professor first directed the attention of pathologists to this institution by his work on the diseases of the skin. Since that time its importance has been properly appreciated.

The eminent names of BIETT, ALIBERT, LUGOL and RICHERAND occur, in the list of its clinical professors, and crowds of students from the different quarters of the globe avail themselves of its medical advantages. The hospital contains upwards of a thousand beds, and though from its original destination it receives many chronic cases, yet from its locality, its doors are necessarily open to different acute and surgical diseases.

The division under the charge of MM. Biett and Alibert comprises two hundred and twenty beds. During a visit to Paris in 1832-3, through the kindness of these gentlemen I obtained free access to their wards. It was however principally in the service of M. Biett, who had under his direction one hundred and sixty patients distributed in four wards, remarkable for their beauty and convenience, that I made most of my observations on cutaneous diseases. M. Biett facilitated any inquiries by every means in his power, and it is to him and to M. MARTINS, the aide naturaliste of the school of medicine and the interne at St. Louis, that I owe the greater part of the notes I have made. The observations are about a hundred in number, and I propose selecting from them such as may exemplify the practice of that eminent pathologist. Before presenting any of these cases, I would observe, that I have considered the classification of BATEMAN and WILLAN as adopted by M.

Biëtt, as preferable to that of M. Alibert. The first cases which are presented are those of elephantiasis which were in St. Louis in 1832. The pathological history of this affection is exceedingly imperfect; much is yet to be desired, and the investigation of the disease offers a wide field for observation. The object of the writer is to present the subject to those whose opportunities may be favourable to its elucidation.

Elephantiasis of the Arabs complicated with frambæsia.—Barbier, aged twenty, by profession a joiner, entered the Hôpital St. Louis, service of M. Biëtt in the autumn of 1833. In the month of December, I collected the following facts respecting his case.

He was born in the Department of Haute-Saone; has never been in tropical climates, but has always lived in France, and his parents were free of all cutaneous disease. His nourishment has always been good. During the first years of childhood until he was nine years of age, he enjoyed good health; from that period until the age of seventeen he was affected with a succession of abscesses in the groins, on the neck, arms, and at the sternal extremity of the left clavicle. From the appearances of the cicatrices, there is no doubt, but, that these abscesses were scrofulous. They are of a brown colour, almost livid, intermixed with white, of an irregular form, and an uneven surface.

The present affection commenced two years ago, immediately above the great toe of the right foot, by a slight elevation and discoloration of the skin, attended with local pain and some fever; these symptoms were followed by a small, soft, projecting tumour of a red colour which bled upon the slightest touch.

Six months afterwards the patient contracted a blenorrhagia, which ceased in a month under the treatment of injections of infusion of marsh-mallow, drinking the decoction of sarsaparilla and the liquor of Van Swieten. No secondary symptoms followed, but the cutaneous affection was subsequently augmented; since that time he has not had any venereal symptoms. The disease extended itself by the successive formation of the spongy tissue from the toes to the superior part of the thigh. It presents, according to its degree, four principal forms.

First. A small, indolent, subcutaneous tubercle of the size of a pea, causing a slight elevation of the skin. This is the commencement.

Second. Convex elevations exactly circular rising from one to four lines above the skin, surrounded by a brown circle varying in diameter from a quarter of an inch to one and a half inches, of a red colour, soft, spongy, analogous to the fungus of wounds, and bearing some

resemblance to raspberries lying side by side, and exuding a red serosity.

Third. Masses formed by the union of the above, but of irregular forms, of variable size, covering the leg and the inferior part of the thigh. The greater part of these tubercles have the same appearance as those which are isolated. Where the healing process has commenced the surface is drier, less elevated, and not so irregular. At the superior and inferior part of the leg the vegetations have the forms of small fleshy tongues, imbricated, resembling the crest of the cock.

Fourth. Cicatrices, which are sometimes large, smooth, of a white colour, slightly elevated above the healthy skin; sometimes the fungosities seem to have dried up without changing form, and have assumed a brown, livid appearance.

The union of all these alterations have changed the form of the limb, and gives it the appearance of the elephantiasis of the Arabs. The circumference of the superior two-thirds of the diseased leg is one inch more than that of the corresponding part of the other: the inferior third is one inch and three-quarters more than the left. The limb is the seat of excessive itching, and when cauterization is attempted by the per-nitrate of mercury the patient suffers excruciating pain. With the exception of the cutaneous affection his general health appeared good during the winter of 1833-4. Treatment—Infusion of hops for habitual drink, with ℥ij. Sub-carb. soda, per. Oj.; alkaline baths daily, and cauterization with per-nitrate of mercury, (nitrique acide de mercure.)

April and May.—After the first of April, excessive diarrhœa commenced, attended with extreme prostration of strength; the tongue was red, dry; thirst extreme; abdomen slightly painful upon pressure; the pulse frequent, (88,) and feeble; his usual cheerfulness forsook him, his mind became depressed, and he complained bitterly of his situation. The diarrhœa was arrested at intervals by regulating his diet, and by opiates and astringents, but was renewed by the imprudent excess of the patient. During this time the vegetations, (fungosities,) and the tissue of the cicatrices ulcerated, and the diseased limb was covered with extremely painful ulcers, very irregular in their forms, their edges perpendicular, and internally of a grayish colour. The slightest pressure upon them produced an exudation of very foetid pus. With these symptoms the patient died on the second of June.

Autopsy, thirty hours after death.—The skin on every part of the diseased limb was thickened, and with the cellular tissue beneath was

from one-fourth of an inch to an inch and a half thick. On the cicatrized points the epidermis was smooth, and beneath this the entire thickness of the cellular and adipose substance, with the exception of a few isolated masses of adeps, was replaced by a white, fibrous, aponeurotic tissue, which was firmly attached to and blended with the dermis. In the points in which cicatrization had not commenced, the epidermis appeared detached from the dermoid mucous tissue, which was red, thickened, slightly uneven, (*mamelonné*,) bearing some resemblance to the intestinal mucous membrane, and could be raised without dissection from the subjacent adipose layer. In the middle of the thigh between the sartorius and rectus femoris muscles, was an abscess of the size of a goose-egg, containing a white, tenacious pus; and on a level with the internal malleolus, all the cellular tissue for the space of two inches was changed into a sanious mass of a slate-gray colour, and of a foetid odour. At the external healthy parts of the leg, the adipose substance was two lines in thickness, soft, and of a clear light-yellow colour; in the diseased parts, on the contrary, it was an inch thick, and separated into masses by a white tissue. This tissue was firm, resistant, and was penetrated with difficulty by the scalpel; the cells formed by the interlacing of its fibres contained beside the adeps, a great quantity of serous and gelatinous fluid. In the parts which were highly diseased, the skin was entirely destroyed, and the ulceration extended to the adipose layer; on the internal and superior part of the leg and beneath the aponeurotic fascia was an abscess of the size of a hen's egg, containing greenish pus, and partly lined with a false membrane. The tunics of the internal saphena vein were thickened, and when cut across, the cut extremity remained open like an artery. The tendons, bones and periosteum were healthy.

Thorax.—A small group of tubercles were found at the summit of the right lung. Near these was a cavity traversed by fibrous bands, and was evidently a cicatrized tuberculous cavern. The rest of the lungs crepitant, and floated when thrown on water.

Heart.—The heart was soft, and the parietes of the ventricles thin.

Abdomen.—The liver was much enlarged, it not only occupied the epigastric region, but extended into the left hypochondriac; the volume of the left lobe was almost equal to that of the right, its entire weight eight pounds. Externally and internally it was yellower than usual. The gall-bladder contained a greenish bile; its ducts were unobstructed. The mucous membrane of the stomach, and the intestines in their entire extent had its normal colour and consistence.

There was neither redness nor softening, nor induration of this tissue.

Remarks.—The hypertrophy of the adipose substance, the hardness of the cellular tissue, and the effusion of serosity and gelatinous fluid, leave no doubt of this disease being an elephantiasis of the Arabs. These characteristics, and more especially that of the presence of the serous secretions, has induced M. BOUILLAUD to consider this disease as bearing a strong pathological resemblance to the œdema of phlegmasia dolens of women. It is much to be regretted, that the details of the case have not been collected with more precision; some interesting facts are however deducible from it. The disease occurred in a tuberculous subject; it supervened upon the healing of scrofulous abscesses, and the appearance of framboesia occurred before the patient had contracted any venereal disease. M. ALARD, to whom the medical profession is greatly indebted for the lucid manner in which he has examined the history of this disease, assigns as one of the causes of its production the suppression of some habitual evacuation—in this case the coincidence of the suppression and the appearance of the disease is presented. M. Alard has not, however, been able to collect a sufficient mass of evidence to establish the fact; the present case is, therefore, offered merely to excite further observation. Although Alard mentions, on the authority of HENDY, that framboesia complicates the disease, yet he has not given any detailed case of its concurrence. Judging from the circumstance of its being rarely mentioned by authors, it cannot occur frequently. Framboesia has been placed by a distinguished writer among the syphilitic diseases. In this case it occurred in a person whose parents had been free of any syphilitic taint, and previous to his exposure to infection. Elephantiasis of the Arabs seems to have been first described by RHAZES. The name has been the cause of much confusion, and it was not until HILLARY and HENDY of Barbadoes gave their account of the glandular disease of that island, that the profession appear to have had any definite notions upon the subject. The medical world is indebted to those authors for the suggestions of its being a disease in which the glands and lymphatics are particularly and principally affected. Alard, with great research and with indefatigable industry, has investigated the subject very thoroughly, and proves, from a comparison of the symptoms, that the glandular disease of Barbadoes of Hendy, the perical and andrum of Ceylon, the colic of Japan, the elephantiasis of Rhazes, the fleshy hernia of Prosper Alpinus, and the sarcocoele of Egypt, are pathologically the same disease. It is not the intention of the writer of this communication to enter into a detail of his reasoning, and he begs, therefore,

to refer to the author in question. Previous to leaving the subject, he would wish to state, that Alard found this disease infinitely more common in Europe than was supposed, and the truth of this observation has been confirmed by ALIBERT, RAYER, and BIETT.

Respecting its pathology, the writers are not unanimous in their opinions. Alard considers it as uniformly depending upon an inflammation of the lymphatics; Biett and Rayer acknowledge that this is frequently the case, but that it is not necessarily the primitive affection, and that it may occur as a secondary lesion after the enlargement of the other tissues. M. Bouillaud* reports a case occurring in a woman, in which the inferior extremities were enormously distended and exceedingly hard, the disease resembling exactly elephantiasis. Upon a post mortem examination, it was found that the skin and subjacent cellular tissue were an inch and a half thick, having the appearance of the skin of the hog; that the lumbar portion of the vena cava, and all the veins of the inferior extremities were obstructed by deposition of fibrinous matter. The lymphatics were healthy. Hypertrophy in this case would seem to be consecutive upon obliteration of the veins. In the present state of the science, the question of the inflammation of the lymphatics is not determined, and is thus left as a problem to the pathological observer.

The anatomical investigations respecting this disease seem to have been limited principally to the local examinations of the affected part. The pathological researches have not been extended to the internal viscera, and hence the history of the disease in that respect is exceedingly obscure.

Hendy has found the lymphatic ganglions hardened, or in suppuration, and larger than natural; the absorbents were dilated, having their parietes so enfeebled, that it was impossible to distend them by an injection. The areolar structure of the cellular tissue is distended by a thick, viscous, gelatinous fluid, mingled with a serous fluid. The cellular tissue is found much developed and hardened. The skin may preserve its natural colour and appearance, but it generally presents an alteration of structure; it is ordinarily much thickened.

M. ANDRAL reports a post mortem examination of a patient in whom one of the legs was enormously distended by elephantiasis. Upon dissection of this limb, the subcutaneous and inter-muscular cellular tissue was found hard and much developed, resembling the sub-mucous cellular tissue when in a scirrhus state, indurated and

* Archives Générales de Médecine. Tome 1re, p. 567.

becoming more dense as it approached the cutis vera; this was much thickened, and frequently could not be separated from the sub-cellular tissue; it was not, however, either injected or modified in its colour. Above this was found a tissue evidently distinct from the dermis, and which appeared to be to this what the villi are to the intestinal mucous tissue. Between these papillæ and the epidermis were three distinct laminæ; one, the most internal, extremely delicate, and which filled up the inequalities of the subjacent papillæ, was formed of a cellulo-fibrous tissue, and received no vessels, it corresponds with the “couche albide profonde” of GAULTIER, or the “couche epidermique” of DUTROCHET. A second, exterior to this, composed of dark-coloured, delicate filaments, interlaced in every direction, formed a net-work analogous to the coloured lamina of the skin of negroes. Finally, a third directly beneath the epidermis, which was variable in thickness, sometimes merely presenting a white line similar to that mentioned as overlaying the papillary structure, at other times thicker, harder, like a series of small superposed scales, corresponding with the “couche albide superficielle” of Gaultier, and the “couche cornée of M. Dutrochet.

From these facts it follows, that the dermis or cutis vera is composed of two parts, which ordinarily confounded, have, however, so dependent a condition upon each other, that it is only in certain pathological states that they can be isolated.*

Much of the uncertainty of this disease doubtless arises from the fact of numerous diseases pathologically different, being called by the name of elephantiasis of the Arabs. Thus, some authors designate by this title every enlargement or swelling of the cellular tissue of the limbs, of the scrotum, of the face, independently of those by cedema or infiltration of blood.

M. Alard restricts the appellation to a particular affection of the skin, and the subcutaneous tissue and lymphatic system, which is announced at first by the formation of a hard cord, which is painful, knotted, following the course of the lymphatics and glands, and characterized subsequently by a swelling and permanent induration and augmentation of the skin and cellular tissue, with morbid increase of adipose matter, accompanied by a serous and gelatinous effusion in the diseased parts, the dimensions of which often become enormous.

Various causes are assigned for the production of this disease. Thus, insufficient nourishment, or food of a bad quality; excessive heat, with a moist atmosphere charged with the exhalations from a

* Andral, Anatomie Pathologique. Tome 1re, p. 169 à 175.

marshy soil; extreme neglect of cleanliness, &c. are all considered as being important agents in its production.

Climate unquestionably has a direct influence upon its formation. In the Island of Barbadoes this disease is endemic, and cases of it are so numerous among the inhabitants, that the title of “Barbadoes leg” is one of its most common appellations. Hendy considers that the destruction of the forests, which formerly covered that island, is the cause of its remarkable prevalence. The temperature, in consequence of this disappearance of the woods, is remarkably hot and arid, and he refers the proximate cause of the disease to these characteristics of the climate.

Alard, who examines in detail the question of the causes, arrives at the conclusion, that the formation of the disease is not owing to the quality of the water, the nourishment of the individual, the heat, dryness, or humidity of the climate, but that it depends upon sudden exposure, when heated, to currents of air.* He also proves satisfactorily from many observations, that the disease is neither hereditary nor contagious.

The symptoms of the disease as given by this writer, are the following:—The attack is sudden and unexpected. At first a pain is experienced in a gland, or in the course of the principal trunks of the lymphatics; these vessels are almost always hard, knotted, and presenting the appearance of small, tumefied glands, which are often-times discoloured. Sometimes the course of this cord which follows the pain is indicated by a red line, unaccompanied by elevations; this is always the case when the attack has been slight. The diseased part becomes red, swells, and presents an erysipelatous appearance, and is often phlegmonous. The concomitant fever, if the attack be severe, is preceded by a chill, and accompanied by intense thirst, nausea and vomiting; if the chill be severe, the reaction is correspondent. After a longer or shorter duration the fever disappears, and the affected part becomes swollen, and continues inflamed for several days. The inflammation ceases, but the swelling and enlargement continue; it appears to be œdematous in the commencement of the disease, but after a few attacks, the diseased part becomes very hard, and does not yield to the pressure of the finger. Frequent erysipelatous attacks supervene, and the permanent enlargement, which is the consequence, soon manifests the character of the inflammation. The disease may attack any part of the body, but it ordinarily commences upon the feet or malleolus, by the ap-

* Histoire de l'Elephantiasis des Arabes, par Alard. From page 323 to 354.

pearance of small, red lines, which soon extend to the legs and thighs.

GUILLEMÉAU, who studied the disease very attentively in the Isle of France, remarks, that generally only one foot is primitively affected, but that after the thigh of the diseased limb begins to enlarge, then the other manifests the commencement of the disease at the malleolus.*

When the disorder attacks the inferior region of the abdomen, the signs which present are rather more obscure. It produces sharp pain, much uneasiness, but without any marked character; but the enormous distention of the abdomen which succeeds these pains, or the tumefactions round the verge of the anus, or of the enlargement of labia in women, or of the scrotum in men, soon dissipate the first uncertainty.

The skin not being the primitive seat of the disease, is not necessarily affected; thus, it sometimes presents merely a whiter appearance, with a slight hardening or resistance upon pressure, (*renitance*,) sometimes the subcutaneous veins are enlarged, varicose tumours result, and the skin is of a violet colour. This tissue, however, does sometimes present various alterations. Thus, in addition to the erysipelatous appearance previously mentioned, vesiculous inflammation is often presented; in this case a slight effusion ensues, followed by thin, soft, yellowish scales; in other instances appearances similar to those of ichthyosis take place; finally, in certain circumstances, fissures with ulcerations ensue, which become covered with thick, yellow scales.

The lymphatic glands oftentimes are hardened and scirrhus, or suppurate, or even become gangrenous, and frequently deep, fetid ulcerations ensue in the limbs after their size has become enormous.

Treatment.—Respecting the treatment, much is yet to be decided. Bielt recommends that topical depletion by leeches should be employed at the commencement of the disease, when the inflammation of the lymphatic vessels is manifested by their redness and hardness; the leeches should not, however, be applied *directly* upon the course of the vessels, but a little on either side. In conjunction with this, he uses emollient applications, and enjoins entire rest. In the chronic state, (in which it is generally seen,) venesection has been proposed, but its success does not seem to recommend it; in some cases, indeed, it has proved positively detrimental. Rayer recommends very highly, scarifications along the course of the lymphatics,

* Alibert, *Dermatoses Lepreuses*, p. 239.

and this is a favourite remedy of LISFRANC, who reports many cases where the result has been very satisfactory.*

The experience of the Hôpital St. Louis is, however, in favour of a different course, and the eminent physician,† of that institution considers that the best treatment consists in compressions, friction, and the use of local vapour baths. Compression is made by a bandage from an inch to an inch and a half in width, and applied by a moderate force. The frictions should be made with an ointment of hydriodate of potash in the proportion of hydriodate, ʒss. to adeps, ʒj.; this application, however, is to be relinquished whenever an acute inflammation supervenes. Whilst in the vapour bath, the patient should be directed to use friction upon the diseased part. As regards the amputation of the affected limb, experience is decidedly adverse to its employment, as the disease almost invariably attacks other members.

The internal treatment being very similar to that of the elephantiasis of the Greeks, will be given in the remarks of that disease.

Elephantiasis of the Greeks.—Mr. L. a lawyer, aged twenty-eight, born at Crepa in Alentejo, in Portugal, entered the hospital of St. Louis in the winter of 1832. The patient is a large, muscular man, with black eyes and hair; his intelligence and literary acquirements are remarkably great. He gives the following history of his case:—His parents enjoyed good health, and had never had any cutaneous disease. He had no serious indisposition until the sixteenth year of his age, (1820,) when the present disease commenced by an extreme feebleness in the ring and little finger of the left hand; he lost the power of extending them voluntarily, they became flexed against the palm of the hand, and it was necessary to employ the right hand when he wished to straighten them. This loss of movement has gradually increased, and he now finds it impossible to overcome the flexion. In 1827 a discoloration of from three to four inches square, of a light-brown colour, (café au lait clair,) slightly elevated, appeared upon the calf of the left leg. This spot was insensible to slight pressure, and it required a sharp blow before the patient perceived any sensation in it. This insensibility extended over the whole limb; and in illustration of this fact, he mentions, that being near a stove he was severely burned, but was not aware of the injury until he observed the consequent vesication.

In 1828 a small tubercle, of the size of a pea, appeared below the

* Rayer, *Maladies de la Peau*. Art. *Elephantiasis des Arabes*.

† Biett.

chin, which was repeatedly cut by the patient in shaving himself: this tubercle was followed by several others, and in 1830 the entire face was covered. No assignable cause can be given for the production of the present disease. The patient has never had the slightest syphilitic symptoms, has never committed excesses of any kind, and his situation in life has always secured to him all possible comforts.

I saw him for the first time in January of 1832, and his appearance, which has been but slightly modified since, was as follows:—

The entire face was of a brownish-yellow colour, (bistre of the painters,) the nose, eyebrows, and more especially the vicinity of the chin, are covered with tubercles of different dimensions, varying in size from that of a pea to a hazel-nut. The smaller tubercles are convex; the larger flattened. When examined closely, their colour is redder than that of the face. They are hard and incompressible.

These elevations produced a singular effect upon the physiognomy of the patient: the beard continues to grow from among the groups on the chin, whilst the hair of the eyebrows has fallen, and the entire face is peculiar: many of the students imagine that it resembles that of the lion. The arms are covered with spots more or less raised above the level of the skin, some are merely perceptible to the touch, whilst others are elevated from one to two lines. Their colour varies from a light brown, (café au lait,) to that of the darkest bistre. The skin where they exist is insensible, but in the interspaces of the elevations it is remarkably white and delicate.

On the left arm, where the patient was burned, we observe slightly depressed cicatrices of a violet colour. The skin on the hands is extremely fine and delicate, and redder than usual. The fingers of both hands are flexed; those of the left immoveable. The patient can feebly grasp objects for a short time with the right hand. The neck and body are entirely free of cutaneous disease.

The inferior extremities are covered with spots analogous to those on the arms. On the upper part of both feet are large cicatrices, slightly depressed, of a red colour, caused by the burn of 1827, and which frequently ulcerate; these ulcers are round, with perpendicular edges, which heal by rest and the frequent use of the vapour bath. The general health of the patient is good, but in the spring and autumn he has violent attacks of pain in the head; the tubercles then increase in size, become redder, and are extremely painful upon pressure: combined with these symptoms are—a frequent pulse, loss of appetite, and obstinate constipation. Venesection uniformly relieves him, whilst leeches applied to the neck produce no beneficial effect.

On the 15th of November, 1833, the patient experienced all the symptoms above-mentioned attended with great prostration of strength. Pulse 95. These were the precursors of an erysipelas of the face, which was first observed on the following day. The face became red, tumefied, and painful; the tongue white; thirst extreme. Venesection and lemonade.

17th. Large vesicles have formed on the cheeks, but on the lips and chin a puriform secretion has taken place. The acute symptoms of yesterday are slightly modified; the skin is moist and covered with perspiration. From this time the disease rapidly declined, and at the end of ten days the skin has assumed its ordinary brown tint. The tubercles of the forehead and nose were less prominent, but the lips and cheeks were covered with thick, dark-coloured crusts, which fell off spontaneously at the end of a week.

The primitive disease of the face was evidently rendered much better by this attack of erysipelas. The tubercles were flattened and diminished in size, their colour became more like that of the healthy skin; the eyes were less sunken into the orbit, and the chin not so prominent. A circumstance connected with this attack of erysipelas, produced a strong impression upon the medical attendants of Mr. L. He had persuaded himself the erysipelas would prove fatal, and it was, with feelings bordering on despair, that he found his health would be reëstablished.

Many modes of treating the disease were adopted. At the commencement of 1832, M. Biett prescribed the proto-iodide of mercury; it was gradually increased until given in the dose of three grains a day, of which the patient took eighty pills. This treatment produced no diminution of the tubercles, and the violent pains it caused in the stomach, prevented any further employment of it. After this, recourse was had to numerous vesications, of an inch and a quarter in diameter, followed by a cauterization with per-nitrate of mercury: this also caused intolerable pain, and was abandoned. Subsequently, the size of the blisters was diminished to one-fourth of an inch, and the vesicated surface was washed with a solution of nitrate of silver. The tubercles on the cheek and chin were diminished in volume by these applications, but this result was scarcely obtained upon one part of the face before they reëppeared upon another, rendering it very evident that the melioration was but momentary. The patient after remaining for several months in Paris without any very great permanent amelioration, returned to Portugal in January, 1834.

Remarks.—Much obscurity has arisen from the circumstance of two diseases so different in character as the malady of Barbadoes,

and that, of which we have just detailed an observation, being called by the same generic title of elephantiasis. The elephantiasis of the Arabs is entirely distinct in its appearance and character from this affection. It does not present the tubercles which are developed in the skin and the subcutaneous tissue, but consists in an enlargement of one or more parts of the body, and especially of the legs. The skin in elephantiasis of the Arabs, is not, as in that of the Greeks, primitively affected.

The elephantiasis of the Greeks has been attributed to a syphilitic origin, but on insufficient evidence. In the case of Mr. L. there had never been any venereal infection. Again, the appearance of syphilitic tumours are unlike in colour, in density, and in volume. The tumours of elephantiasis are larger, softer, and have not the copper tint. The syphilitic ulcerations have deep, perpendicular edges: their bases are grayish, and surrounded by a hard cellular tissue: their form is almost circular, and unlike the superficial ulcers which are situated on a soft, fungous tumour, which constitutes that of the elephantiasis of the Greeks.

One of the most remarkable symptoms which attends this disease, is the loss of sensibility in the parts affected. This has been remarked by almost all pathologists who have written upon the subject, excepting Rayer, who mentions two cases in which this phenomenon was wanting.*

A very interesting circumstance connected with the history of this case, is the amelioration of the disease in consequence of the occurrence of erysipelas. M. Rayer reports an observation in which a similar effect took place, and after repeated attacks of erysipelas, an inveterate elephantiasis was almost entirely cured. Similar facts have been observed by M. Biett, and with the "view of increasing the vitality of the affected parts at the commencement of the disease," he employs dry frictions, volatile liniments, or, what he prefers, vesicatories upon the spots and tubercles. Under this plan of treatment, several of his patients have recovered. When the disease is more advanced, he recommends frictions with the ointment of hydriodate of potash, (Hydriodate potas. $\mathfrak{3j}$. to Adeps, \mathfrak{Zj} .) which he has found highly serviceable. Conjoined with these topical applications, he also employs the local vapour bath, thrown in a jet upon the affected parts. If the disease be general, vapour baths for the entire body are recommended.

When the disease has been of long duration, and the tubercles dis-

* Rayer. *Maladie de la Peau*. Tome 1re, page 660.

seminated over a large surface, in addition to lotions slightly irritating, he recommends alkaline or sulphur baths. An internal treatment is also demanded; he uses accordingly the sudorifics—the tincture of cantharides and the arsenical preparations. The decoction of sarsaparilla with guaiacum, squills with a small quantity of *Daphne mazareon* may be administered to the patient. His usual dose of the tincture of cantharides is, at the commencement of its exhibition, three drops in the morning before eating, and gradually increasing to twenty or twenty-five. M. Biett gives, however, the preference to the arsenical preparations. Of Fowler's solution he recommends three or four drops a day at the commencement, gradually increasing to twenty or thirty, but watching with great care its effects upon the system, and regulating its administration accordingly. The experience of M. Biett, in the internal use of the different preparations of iodine, is not yet sufficiently great to permit him to give a definite opinion respecting their merits. Reasoning from analogy, however, this would appear to be among the most valuable means of combating this disease.

In India the Asiatic pills, consisting of one-thirteenth of a grain of arsenic to nine times that quantity of black pepper, have been much used, and cases are reported where the result has been favourable to its employment.*

M. DE Pous has seen a cure effected by the use of the Lisbon diet drink conjoined with squills. M. DAYNAC a case of cure by the use of the hydrochlorate of gold combined with the powder of the *Lycopodium clavatum*, and applied by frictions to the tongue and gums. ROBINSON has lauded very highly the *Asclepias gigantea* pulverized, in combination with calomel and the antimonial powder.†

Calomel does not appear to have been much employed by the continental European practitioners, and we have very few cases reported by them in which it was used. This powerful agent should not be omitted whilst speaking of the remedies employed in the treatment of elephantiasis. But the facts collected on the therapeutic history of this disease are not yet sufficient, to say positively what are the best means of combating it. M. Alibert remarks, with great truth, “tout est à rechercher, tout est à decouvrir dans le traitement de cette maladie.” He urges the great importance of attention to the food and habits of the patient.

It is much to be regretted that the observations respecting this

* Rayer. *Maladie de la Peau*. Tome 1re, page 687.

† Alibert. *Clinique de l'Hôpital St. Louis*.

disease, and those of cutaneous diseases in general, have been so vague and unsatisfactory. Had the rigid accuracy which characterizes the founder of "the numerical system of observation"* been adopted, what positive and certain results should we not have seen? Much, however, is to be expected from that eminent physiologist, M. Biett: and, from the great mass of facts which he has collected, this still obscure part of medicine will probably be much elucidated.

The anatomico-pathological appearances have been reported too vaguely to present any definite notion of the lesions which may characterize this disease.

Inflammation of the skin after recurring repeatedly on the same part causes a tuberculous induration, having a white appearance, and which resists the scalpel. The skin which covers these indurations is generally thinner than that on healthy surfaces.

Tubercles are frequently found on the mucous surfaces of the mouth, pharynx and larynx. In cases where the voice of the patient was much altered, tubercles with ulcerations were invariably found in the larynx: in one instance the arytenoid cartilages were almost entirely destroyed. The lungs are generally tuberculous, and the peritoneum and mesentery are also implicated in the same manner. The mucous coat of the intestines are reported as being almost always more or less ulcerated; and the glands of Peyer are frequently the seat of ulceration.

Alibert and the Baron Larrey cite cases where the bones were found carious or spongy.

Elephantiasis Topica, (PLENCK.)—Frederic, aged seven and a half, was born in the Island of Trinidad, of a French father and Indian mother, both of whom enjoyed excellent health, and were free of cutaneous disease. He left America at three and a half years of age, previous to which time he had always been very healthy. His appearance is that of a delicate child, with but little muscular development; dark eyes; black hair; very intelligent, and of remarkable quickness of perception. Shortly after his arrival in France he had an attack of continued fever. The present disease commenced in the month of August, 1830. The first symptom which was manifested, was a difficulty in holding the pen in writing; the indicator of the right hand became flexed, and the child lost the ability of extending it voluntarily by its extensor muscles. The middle finger of the same hand soon afterwards became also flexed, and the wrist was extremely weak. The power of extension of the right hand becoming more

* M. Louis.

and more impaired, his father took him to the springs of Neris in the autumn of 1831, at which place he passed six weeks. It was there that the first ulceration of the fingers took place, and caused the loss of the nail of the indicator of the right hand: since that time the disease has made continued progress.

December 23d, 1832, present situation.—Right hand. The arm being in pronation, the hand and wrist falls perpendicularly by its own weight, and the child finds it impossible to raise it, except by a general movement of the whole arm. The action of the flexor muscles, however, is unimpaired: he can bend the wrist, or grasp substances between his fingers. The different bones of the fingers are flexed on each other, and upon those of the metacarpus. The terminal bones of the indicator, as well as that of the third finger, have been separated by ulceration at the joint. The nails of all the other fingers have fallen off by ulceration, leaving surfaces more or less concave, of a pale-red colour in the centre, dry, cracked, and resembling ulcerated chilblains in the process of healing. The rest of the terminal extremities of the fingers are covered with a hardened skin, which in places is also ulcerated. Beside these alterations of structure, there is an ulceration at the junction of the second and third phalanges of the ring finger.

Left hand.—The patient can readily extend and flex this hand on the forearm, although all the phalanges of the fingers of the second and third row, are permanently bent on the first, and cannot be extended by their proper extensor muscles. The thumb is uninjured. The indicator has a transversal fissure with a red base, at the junction of the first with the second phalanx; at the other joint of the same finger is an elliptical ulceration of the size of a small bean which commenced fifteen days ago.—*Middle finger.* At the base of the nail is a round ulceration surrounded with a yellow, indurated skin. The terminal bone of the middle finger has fallen by ulceration, and the rounded extremity is covered with a hard, thick skin, like that covering the parts of the feet which are pressed upon in walking. There is also a slight ulceration on a level with the articulation of the first and second bones. The little finger is uninjured.

Right foot.—At the junction of the fifth metatarsal with the tarsal bone, exists an elliptical ulceration one-fourth of an inch long, with a red base, and surrounded by a yellow skin of a hardness equal to that of horn. Below the patella of the same leg, are seen two brown cicatrices, which are the traces of previous ulcerations.

The sensibility of the hands is very obtuse; the child does not perceive a slight touch, and does not feel unless the fingers are strongly pressed, or picked with a sharp instrument.

None of the ulcerations have been either preceded, accompanied, or followed by any pain. The child is very cheerful, takes great pleasure in his sports, and the sensibility of his diseased hands is so obtuse that he frequently scratches up the earth with them. His general health is excellent. *Treatment*—Baths for the hands every day for an hour, in decoction of poppy-heads; infusion of hops for drink, with nourishing and tonic diet.

April 6th.—On the right foot, behind the cicatrices previously mentioned, a vesicle of the size of a hazle-nut made its appearance. It is perfectly round, is formed by the elevation of the epidermis only, and contains a serosity slightly thickened; it is not surrounded by any traces of an inflammatory circle. The child does not suffer any pain, and his nurse is confident that he has not been burnt. Next day the vesicle, (bulle,) broke spontaneously, and left a superficial ulcer of the same size with a very dry surface.

19th. The ulceration has not extended superficially, but has increased in depth. It is attended with very slight suppuration; is not painful, its colour is a pale-red; is without granulations, and its borders are perpendicular.

28th. Same state of ulcer.

May 1st.—Numerous fleshy granulations are observed at the bottom of the ulceration; the suppuration is rather more abundant.

15th. The place of the ulceration is now indicated by a small depressed surface, slightly red, where the skin is finer than the rest, and insensible to the touch. During the spring he had frequent paroxysms of spasmodic cough, which rendered it necessary to have recourse to venesection. There did not appear to be any connexion between this cough and the disease of the skin.

December.—The cutaneous disease has not made any progress, with the exception, that in the month of July, a vesicle similar to that last mentioned, appeared on the right knee, which disappeared at the end of three weeks. The general health of the child is excellent.

Remarks.—This variety of elephantiasis has been described by Plenck under the appellation placed at the head of the observation. M. Alibert remarks in his clinique, that medical travellers in India have brought him great quantities of the nails which had spontaneously fallen off from the fingers of the persons affected with this disease. M. Bonpland relates that the disarticulation of the joints followed by sloughing and loss of the bones of the hand are of frequent occurrence in South America: even the teeth fall from the alveoli as a result of this affection.

ART. V. *On Belladonna in Pertussis*. By SAMUEL JACKSON, M. D.
of Northumberland, Pennsylvania.

HOW long since hooping-cough was first known, or how far it extends over the inhabitants of the earth, we must leave to men of more recondite learning; but it seems now more than probable, that nearly every human being from this time to the end of the world is destined to suffer this painful malady, from which therefore there must arise an aggregate of distress, which no finite mind can at all comprehend. Nor is it to be included among the safe diseases, since more perish of it by a hundred-fold than of both hydrophobia and tetanus together, maladies which have excited far more interest, both in and out of the profession; and if we mistake not, this mortality is to be attributed to the fact, that physicians have hertofore done so little towards the cure, that nine-tenths of the people never apply to them in this disease, till a fatal peripneumony supervenes, and the patient can no longer breathe. The subjects of it too, are generally children, very often infants at the breast, whose sufferings, above all others, we ought to sympathize with, and endeavour to relieve.

Belladonna having been so highly extolled by various physicians in Europe, for its antispasmodic virtues in this disease, we were therefore induced, in the winter of 1831, to make some experiments with it in our own practice.

We have always been decidedly averse to the polypharmacy of our transatlantic brethren; but in this case, wherein their experiments were to be tested, it was considered as unfair to reject any part of their combinations. The medicine was therefore given in mixture with sulphur and ipecacuanha; and the doses of this mixture were alternated with prussic acid, according to the method of Dr. KAHLEISS, as may be seen in Vol. VI. p. 238, of this Journal.

These medicines were given day after day to several patients without the slightest effect. We did not then advert to the fact, that the principal remedy may be given with perfect safety even to a child, till dilatation of the pupil takes place, or it is most certain that we should have given it in larger doses, and for a longer time. But ere this thought came in mind, we had thrown aside the medicine with contempt, and the disease having passed away in the vicinity, we had no opportunity of further experiments. Nor must it be left unnoted, that our belladonna was afterwards found to be utterly inert, to which circumstance we shall have occasion to revert towards the end of this paper. But one point then appeared to be

ascertained by this experiment, that prussic acid, sulphur, and ipecacuanha, which were given at the same time, made no impression on the disease. The acid in particular, was proved to be useless, for it was given in much larger doses than directed by Dr. Kahleiss, because some dependence was to be placed on a medicine which had been so often and so highly extolled both in this and other species of cough, as well as in other spasmodic diseases. That the acid was of good quality, we had abundant proof from other experiments. What effect this sedative might have, if given to the very utmost limits of safety, it is impossible to ascertain in little children, who are unable to give a just account of their feelings; but with respect to belladonna, the effect on the pupil is a satisfactory index, as we shall see in the progress of our paper.

In the subsequent December, 1832, the disease invaded our own family, and as there were five children to go through it of various ages, from eleven to three years, we entertained no hope of seeing the end of our troubles for several months, and therefore we prepared our minds for a most comfortless, and even distressing winter.

Our second child, a girl in her ninth year, had high fever, and her cough was so violent, that the blood streamed from her nose at almost every paroxysm. This too was the mere catarrhal cough that precedes the spasmodic and more distressing form of the disease. She was bled once, purged gently, took tartar emetic in nauseating doses, with an abundance of linseed tea; thus the fever was soon reduced, and the characteristic cough began to be developed. We then commenced with extract of belladonna, giving it simply triturated with water, in what doses we do not recollect, but it was given freely till the pupils were greatly dilated, and her vision so confused, that she could not read large print. To reach this point, did not require more than two days, when the complaint being plainly mitigated, the medicine was for the present omitted. In about twenty-four hours the pupils began to contract, and vision to become more distinct; the belladonna was therefore resumed, and given in larger doses than before. How long she took it, or how large were the doses, we do not now recollect; nor is this point material to our present purpose, as we shall treat of it particularly towards the end; but we do very distinctly recollect that the relief was altogether unexpected and incredible, for in a few days, certainly not more than ten from the time she began the belladonna, the child was totally cured. We do not presume to say, that she coughed none, but we do say, that her fever was gone; her appetite ravenous; that she was

able to attend to all her lessons, and that her cough, if she had any, would have passed unnoticed in any family.

The other four children were soon attacked, and two of them with great severity, as it regards the mere cough. They were all treated as was the first, with the single exception of bleeding, and they all recovered with the same facility. They had no relapses from cold, though they all rode out frequently, and many miles too in the depth of winter; nay, they appeared to have suffered none from either the disease or its remedy.

The principal misfortune attending our experiments was this—that from this time there were very few cases for further trials, the epidemic of the preceding year having pretty well pervaded the country. A few more cases however did present, and the medicine was nearly as efficacious in them also, and would have proved equally so, it is presumed, could we have ventured to give it in as large doses as we did to our own children, who were constantly under our eyes.

About two months ago we had another very striking proof of the correctness of this practice. There now live in Selinsgrove two brothers, Henry and George Snyder, sons of the late Governor of Pennsylvania, both men of strong and cultivated minds. George's children were first attacked with whooping-cough, and we recommended the belladonna. It soon dilated the pupils; confused the vision; rendered the older children unable to read; parched the infant's mouth, rendering it unable to suck, hence it was abandoned in a panic, and other medicines prescribed, we know not what.

Henry's children took the malady from George's; as these were the only cases in that vicinity, and of course it broke out upon them some weeks later. He used the belladonna as George had done till some dilatation of the pupil was observed, and then finding little or no advantage from it, he became sadly discouraged and began to inquire what further could be done. We then urged his resuming the medicine, and stated our own experience—let us see then what he wrote to me in a few days.

Selinsgrove, April 2d, 1834.

DEAR SIR,

The night after you left us our babe coughed very badly, and kept us up nearly all night. In the morning I commenced with the belladonna, and gave it to all three of the children, to the little one five drops, and with the most prompt and happy effect. The two oldest do not cough at all through the night, and the little one not more than once or twice at furthest. During the day they are worse, but this is to be attributed to their running about so much. The medicine is nearly all used, please to send some more.

Yours,

H. W. SNYDER.

Selinsgrove, June 10th, 1834.

DEAR SIR,

In reply to your inquiry relative to the effects of the belladonna on the whooping-cough, I will state that about mid-winter my three children, beginning with the oldest, took the disease, and were coughing badly when I commenced giving the belladonna under your directions. The effect produced after some days perseverance, was indeed astonishing. It acted like a charm. The children all slept perfectly well throughout the night, and during the day seldom coughed, unless they exerted themselves too much in their play, when the excitement would bring on a mild fit of coughing. In the space of five or six weeks from the beginning* they were entirely cured.

Very respectfully,

Your obedient servant,

H. W. SNYDER.

It certainly requires some courage to give this medicine in the most efficacious manner, and this fact, it is presumed, will deter many from giving it as they ought. George Snyder was frightened by the panic of his family physician, and hence his children are still coughing, whilst his brother Henry, who possessed some medical philosophy himself, persevered and performed a cure many weeks ago. And here we cannot refrain from relating our own alarm on one occasion of giving this medicine. Early in the morning we prescribed the belladonna for four of our children, and then left home for Selinsgrove, seven miles distant; but while employed in this town, we began to ruminate on what might be the consequence, and soon fell into a most outrageous panic. We rode home with all possible precipitation, thinking of nothing the whole way but convulsions, deliriums, swoonings, and all the frightful effects of the narcotic poisons, but upon our arrival all was well, though the medicine had been faithfully given.

It is experience, and this alone, that can fortify us against these fears. In delirium tremens, in tetanus, in spasmodic colic—how tremendous must be our doses of opium if we expect to relieve pain or procure sleep, without which the patient must die! We remember the time when we shuddered at having prescribed ten grains of opium in mania a potu, whereas we can now go to bed very comfortably after having given twenty grains with orders to repeat the dose should the patient not become drowsy in four hours. Thus, the experience of one epidemic pertussis would render our practice easy and certain even in cases of the tenderest infants.

If any one then shall condescend to try this method of curing

* That is, from the time they first took the disease.

hooping-cough, let him first remove the greater part of the inflammation by bleeding, laxatives, low diet, nauseating doses of tartar emetic, and an abundance of milk-warm linseed tea. Bleeding and blistering may be necessary at the onset, and even in the progress, if inflammation supervene as it is very apt to do upon weak or unsound lungs. Leeching or cupping may often be more suitable, nor can it require much medical acumen to determine on this point. But many cases will occur in which the belladonna may be given almost from the first, at the same time that the above-mentioned antiphlogistics are in use.

The next point is to ascertain whether your medicine is really belladonna, or some vile imposition. A year ago we sent to a friend in Philadelphia to procure us an ounce of belladonna, and one of hyosciamus. He did not go whither he was directed to procure them, and thus it happened that both parcels were nothing but hyosciamus. Our olfactory organs are remarkably obtuse, and hence, upon first smelling one bottle, and then the next, the deception was not apparent. Well! we applied some of this supposed belladonna to a gentleman's eye for the purpose of tearing open the pupil, contracted by an iritis, but it was all in vain—no effect was produced on the eye, but a sad disappointment and vexation on the poor gentleman's mind.

But suppose the medicine be actually extract of belladonna, it is two chances to one if it be active. What I first used in 1831, as above related, was utterly worthless, though just obtained from a very careful apothecary in Philadelphia; the parcel that George Snyder first used, he obtained from Harrisburg, and it too was inert. In Europe it would appear, that the powdered leaves and root are more in use, and since extracts are too often fallacious, it would be well if that respectable body of men, the physicians in Philadelphia, would take care that the apothecaries provide those more certain preparations. We made several efforts to obtain them, but was answered that they were not known in the shops of Philadelphia.

Suppose then, that you are provided with the extract; dissolve one grain in a drachm of cold water, and let fall a few drops into some idle person's eye; if it dilate the pupil, and confuse the vision very seriously for twenty-four hours, the medicine is good. But it would be well to try it still further, by giving it to another person internally; if to an adult, in doses of three grains every two hours, till the effect is produced, or the medicine proved to be inert. It was by applying it to our own eyes, that we ascertained the utter worthlessness of that which first deceived us in 1831, but this was after all

opportunity of using a better parcel had passed away for that year. When our own child was attacked in 1832, we found a portion of the medicine which had been in the house for several years, and had therefore been supposed to be inert, but upon dropping a solution into our own eyes, it was quickly ascertained to be good.

Suppose then, that the system is well prepared for the belladonna, and that you have some which is certainly of good quality; let the extract be triturated with water, to which, in order to prevent fermentation, add a suitable proportion of proof spirit; give this to a child three months old in such doses every three hours, from sunrise till bed-time; that each dose shall contain one-sixth of a grain of the extract; to a child of two years old a full grain may be given; to one four years a grain and a half, and from these data the medium dose for any age can be easily ascertained. But with respect to the dose, it is certain that we know but little, as our experience has been very limited, and the strength of extracts is very uncertain.

The effects on the system must be carefully watched, and as soon as dilatation of the pupil takes place, the medicine must either be omitted altogether, or given in much smaller doses. We consider it as far the safest to give no more until we may be satisfied that the effects of the first exhibition are beginning to pass off. The reason of this is too evident to the regular practitioner, and others must take the fact, if they are not capable of the reasoning.

As soon as the system begins to rise from under its influence, which may be known in the infant by the state of the pupil, let it be resumed, and given in larger doses than before, so as to make a strong impression. It is now that its powers become apparent, but the dose must be increased, for, like conium, its effects on the system diminish most wonderfully in proportion to the doses administered. The disease will now begin to yield, and how much longer the medicine is to be continued, or what coadjuvants may or ought to be used, let every judicious physician determine for himself, when the case with all its necessities are before him. We are not writing a treatise on the subject of pertussis, but merely endeavouring to show the great and almost incredible power of a single medicine therein.

It is a great comfort in the free use of this narcotic, that a harmless dilatation of the pupil will probably always give us timely notice of the approaching subduction of the system, for, freely as we have given it, there was no other unpleasant effect observed, unless the confusion of vision. Even the eruption which has been supposed to be prophylactic in scarlatina, was not produced in any of these cases. It is true, Mr. George Snyder thought it produced a dryness of the

fauces, which prevented his child of two or three months old from sucking, and this is very probable, as this effect has been commonly observed from an over-dose of the medicine. But we do not recollect that any of our patients were thus distressed, and therefore it seems probable that the child was over-dosed, or perhaps had fever, which predisposed it to be thus irritated and parched. But this dryness may surely be overcome by the constant use of some cold, acidulated mucilage. Henry Snyder's child, six months old, as above related by himself, was almost cured of the most violent grade of the cough in a few days, but no such dryness was noticed.

Such then is the easy victory which we are likely to obtain over this once frightful disease, and for this we are indebted to the genius and industry of Germany. We believe that the belladonna has been seldom used to any good purpose in pertussis by our American physicians. There is only one case reported by them in the whole mass of this Journal—that by Dr. VALK, Vol. VII. page 417—which is very satisfactory. Professor CHAPMAN speaks of it with very little respect in the 5th edition of his *Therapeutics*, and Professor EBERLE, in his *Materia Medica*, gives it credit for benefiting only two cases out of twelve. He adds, however, for our comfort, that he “apprehended the extract he employed was not very good.” Let us, then, in the midst of these doubts and discrepancies, implore those persons who may be hereafter disposed to repeat our experiments—1, to be certain that their medicine is active; 2, that they give it freely; 3, that they do not rest satisfied with an imperfect trial, always remembering that they may deceive themselves, and also be deceived by others. Their first experiments ought to be made among honest, intelligent people, or at least among such as they have known to be faithful. They ought to remember that to cure a disease, does not consist in giving a certain popular medicine therein, but it is to produce on the morbid system a certain catenation of effects, which the learned experience of the physician supposes to be necessary or conducive to the end in view. If these effects do not become visible, his labour is lost, his patient not cured, and the remedy condemned. All men of learning must acknowledge this, yet all our systems of *Materia Medica* are written precisely as they would have been, had they been attempted by PODALIRIUS or MACHAON; they deal largely in the application of medicines to various diseases, but the indications to be fulfilled, and the effects to be produced on the system, are rarely considered.

In the present case, the premises, the reasoning, and the conclusion, are all within a very narrow compass. The mere symptomato-

logy of hooping-cough has long and justly ranked it among spasmodic diseases; hence it was only required to ascertain what medicine might subdue the spasms without superinducing other and worse irritations. Assafoetida has long been used with some advantage, but it is feeble, and hardly worthy of notice; opium is the most powerful of all the antispasmodics in common use, but if given early in the disease, it irritates and brings on fever; prussic acid and digitalis have both been used with some advantage, but were they even as powerful as belladonna, we are doubtful concerning their adaptation to general use. There are no means of knowing, as in belladonna, when we have carried them to their utmost verge of safety in little children. Stramonium has been used it is said with success, which is very probable, since it possesses most of the properties of belladonna. It, too, will dilate the pupil, and give timely warning of danger.

It is a favourite opinion of the present writer, that too little attention has been given to that class of medicines which are directly sedative. Who could have anticipated that in ten-grain doses of tartar emetic, a sedative and a cure would be found for peripneumony? or who could have believed that swimming across the Thames in the delirium of pestis, would have carried off the whole disease? That direct sedatives are within our power, and that they bring this hitherto wayward disease within the grasp of the humblest capacity, is certain; and since physicians have thus ascertained the nature of the disease, and the indications of cure, not from preconceived theories, mere *idola specus*, but from multiplied experience through many generations, it is fondly to be hoped that even better medicines than belladonna may yet be discovered. The acetated preparations of opium, as the acetate of morphia and the acid tincture of denarcotized opium, we have found to be much more safe and useful in this disease than common laudanum, and this we anticipated from the fact that they are far less apt to bring on costiveness, or to obstruct expectoration. They may, no doubt, be often given with great advantage towards the close of the disease.

There is, however, a still more promising method of using opium, for which we may refer to Vol. V. p. 501, of this Journal. Draw a blister on the epigastric region, remove the epidermis, and dust over it a half-grain of morphium mixed with a little starch. Renew the application every evening, and renew the blister also when the first dries up. Dr. MEYER, of Minden, relates that he thus cured five violent cases in eight days, and without using any other remedy than a single emetic in each case. Here, then, if we mistake not, is a very plausible remedy, but surely it would be much more physiolo-

gical to apply the blister to the back, where it is known to operate more powerfully on the substance of the lungs, as well as more directly on the centre of nervous influence.

The question then is—not whether hooping-cough be a curable disease, but which is the most eligible of all the curative means within our reach. Surely those physicians who may first have an opportunity of contending with it in the epidemic form, will not neglect to settle this question by multiplied experiments and indubitable testimony. At present we fear that all is uncertain, and even incredible, unless to those who have seen with their own eyes, and therefore, in the favourite language of Bacon, “we note the subject as wanting.”

Northumberland, June 7th, 1834.

ART. VI. *Case of Ununited Fracture, successfully treated by Friction.* By ISAAC PARRISH, M. D. one of the Surgeons to the Wills' Hospital for the Relief of the Lamé and Blind.

SINCE the principle of exciting inflammation in the surfaces of fractured portions of bone, has been so successfully illustrated by our distinguished countryman, Dr. PHYSICK, the subject of ununited fracture has received a large share of attention from surgeons both in this country and abroad. Several other methods of practice, besides the introduction of the seton, the plan originally proposed, have been supposed to be adapted to particular cases, and have been successfully executed.

The following case exhibits a rare instance of the practicability of effecting the process of agglutination without a resort to the knife or the seton, but simply by trituration of the fractured surfaces of the ununited bone upon each other. This practice would perhaps prove effectual only in a few instances; in the present case several circumstances concurred to render the result peculiarly favourable.—First. The humerus being the seat of fracture. Secondly. The unusual obliquity of the fractured surfaces. Thirdly. The excessive wasting and loss of muscular power in the limb. Fourthly. The robust state of the patient's constitution and his temperate habits.

CASE.—Samuel Sapp, a stout, athletic man, aged about twenty-seven years, from New Jersey, applied to my father, during the last summer, concerning an ununited fracture of the humerus. He stated

that on the 1st of March, 1833, while engaged in his occupation, as one of the deck-hands on board the steam-boat Trenton, he was dragged overboard by becoming entangled in the rope, and in attempting to save himself by seizing the railings, his left arm was fractured.

He immediately applied to a surgeon in a neighbouring town, who carefully adjusted the fragments, and placed the limb in splints; the injured parts being but slightly painful, the first dressings were allowed to remain undisturbed for about three weeks, when other splints were substituted, and continued on the limb, with occasional alterations, for three months. At the end of this period, finding no improvement, his physician advised him to seek further advice.

On removing the splints, the limb was found to be much reduced in size, its muscular power was obliterated, and its capillary circulation feeble. He was advised to lay aside the splints and bandages, to use the limb moderately, and to keep up a steady system of external frictions, and requested to return to the city in cool weather.

On his return in the autumn, no improvement was manifest; and by the advice of my father, he placed himself under the care of my friend, Dr. WILLIAM ASHMEAD, and myself.

On a careful examination of the parts, we found an unusual obliquity in the fractured portions, the surfaces exposed being not less than three inches in extent, the edges of these surfaces, the rounded extremities of the fragments, and the crevice separating the opposing surfaces of the fracture, could be distinctly traced by the fingers. This examination was rendered peculiarly satisfactory, in consequence of the emaciation and flaccidity of the limb.

Owing to the remarkable extent of the fracture, and the loss of muscular power in the arm, the fragments, which in a more vigorous state of the surrounding parts, might have been kept in apposition, were separated from each other to a greater or less extent, as they were influenced by the position of the limb. When the forearm was flexed upon the arm, in the usual attitude for fractured humerus, the surfaces of the fragments were separated throughout their whole extent, but more particularly at their upper portion—and it was only in one position that their apposition was effected.

The limb being placed in that position, which we found upon trial effected a perfect coäptation of the parts, the upper and lower portions of the broken bone were grasped by the hands, and a firm, gliding motion communicated, so that the surfaces could be felt rubbing upon each other. This process was continued for several minutes,

and the limb was then secured in this position by light dressings in an angular box—a piece of thin board being firmly bound over the seat of fracture.

This process was repeated for several successive mornings, and was performed by Dr. Ashmead or myself: the few first trials excited but little sensation in the fractured surfaces, though the force used was as great as we could command. In a few days, however, the patient began to feel pain, which increased at every repetition of the process, until it became acute. The fractured ends were less moveable, heat and action were reëstablished in the limb, and we were obliged to diminish the frequency and severity of the friction.

In about a month, bony union became evident at the lower extremity of the fracture, which proceeded rapidly, and so agglutinated the lower portion as to prevent the necessity of the box: shooting pains were frequently experienced in the limb, and any attempt to disturb it produced considerable suffering. Under these circumstances we declined interfering with the salutary operations of nature, which proceeded most happily. In about two months after the commencement of the practice, we had the satisfaction of observing that a firm bed of callous was thrown out over the whole surface of this extensive fracture.

The muscles soon acquired their accustomed volume and force, and the man has since been pursuing his laborious occupation.

Philadelphia, 4th Mo. 1834.

ART. VII. *A Case of Hypertrophy of the Mammæ.* By S. C. HUSTON, M. D. Resident Physician in the Philadelphia Alms-house.

AT the solicitation of my friends I am induced to publish the following case which fell under my personal charge. Even should no practical results accrue from its publication, to the scientific observer it will still be interesting as affording a curious instance of inordinate organic development.

Charlotte Russel, a coloured girl, had from early life been an inmate of the Philadelphia Alms-house. Of her early history nothing worth commemorating is related prior to the age of puberty. At this critical period when nature institutes a new series of actions in the system, and all the vital forces are augmented, the customary changes are represented to have taken place. Her left breast, however, was observed disproportionately to enlarge, and at the time of her removal,

four months after she had completed her fourteenth year, had attained a formidable size.

Its unusual magnitude attracted the notice, and became a ground of objection on the part of the gentleman in whose service she was about to engage. It was urged, however, by the physicians of the house, that this mammoth production would dwindle to its ordinary size as she advanced in years, and the rest of the body became more matured. With this "quietus" from the medical staff, she was admitted as a domestic into the family of Mr. Henry Miller. But as if all the energies of her system had been concentrated in the mammæ, their unnatural development continued to be steadily progressive until about six months



since, when from some inexplicable cause, both breasts seem to have received a new resistless impulse, and rapidly to have enlarged to their present enormous dimensions. To obviate the inconvenience of such a ponderous mass, a laced-jacket was constantly worn, but the incumbrance did not in any degree disable her from the performance of her ordinary domestic duties. Her activity was even remarkable; she could with the greatest facility climb a tree, or engage in the sportive gambols of youth. Her general health appears to have suffered but little derangement from her peculiar formation; we have no evidence, however, that she had menstruated more than once, and then it is represented to have been but scanty in quantity. Be this as it may, on Friday, April 14th, she was admitted as a patient into one of the wards of this house. At the time of her admission she had just completed her sixteenth year. On examining the mammæ a large superficial slough was discovered, oc-

cupying the most depending part of the left breast—the result of a recent contusion. She appeared to be suffering excruciating pain. Her tongue was furred; her bowels constipated; the surface of the mammæ hot; and the pulse evinced considerable febrile irritation. To relieve these indications the appropriate remedies were employed.

Tuesday, 18th.—Patient still complained of intense suffering. The whole surface of the mammæ now exhibited a disposition to sphacelate. Hectic fever became established—at times she was delirious, and her strength was fast ebbing away. Under such circumstances no treatment could be instituted with any prospect of radical relief. All that could be done was to temporize as long as possible, to sustain her declining strength and mitigate her sufferings by the exhibition of narcotics. In this hopeless state she continued to languish till the 22d, when she expired.

Autopsy.—Externally the mammæ presented the appearance of two large oviform masses, rising above the clavicle, and extending below the umbilicus. No traces of the nipple could be detected, having been completely embedded by the enormous distention of the parietes of the mammæ. On measuring each breast, the dimensions were ascertained to be as follows:—

<i>Right breast.</i> —Greatest circumference		-	-	34 inches.
Lesser	do.	-	-	18 do.
Weight	-	-	-	12 lbs.
<i>Left breast.</i> —Greatest circumference		-	-	42 inches.
Lesser	do.	-	-	26 do.
Weight	-	-	-	20 lbs.

On removing the right breast and exposing its interior, instead of a mass of disease or an accumulation of fluid, (as a superficial examination might have induced the belief,) it proved to be a mere hypertrophy of the organ unconnected with structural disease. The adipose and cellular tissues as well as the whole glandular apparatus were enormously enlarged, but no appearance of disease or exudation of fluid were perceptible. In short, a healthy structure was found, whose only anomaly was its mammoth proportions.

On examining the organs of generation, the ovaria were found to be larger than natural, and apparently diseased. The uterus did not exceed the ordinary size of females at her age, but two-thirds of its inner surface was coated with a dense covering of coagulable lymph. The muscular system was moderately developed. The inferior extremities, from the constant effort necessary to sustain so great a burden, exhibited considerable muscular firmness. The upper extremities, however, were somewhat emaciated and relaxed in fibre. In stature she was about five feet—the medium size, perhaps, of girls at her age.

Remarks.—In reviewing the case, one fact strikes us with considerable force, viz.—that this surprising development of the mammæ was not effected at the expense of any particular organ. It might readily have been supposed that the incessant demand on the animal economy for the growth and maintenance of such an enormous mass would in some way have retarded the development of the rest of the body. On the contrary, notwithstanding this irregular determination of the nutritive elements of the body, each organ seems to have received its full and legitimate supply. The uterus, whose sympathies are most intimately associated with the mammæ, does not appear to have suffered any diminution of its ordinary size from this connexion. Its functional derangement is perhaps explicable, from the fact, that the ovaria were diseased, and two-thirds of the secreting surface of the uterus were clogged with an exudation of coagulable lymph.

But for the early termination of this case, we might perhaps have been enabled to add an account of the successful extirpation of the mammæ. Diseased masses of nearly equal weight and dimensions have been removed without impairing the health or engendering a single bad symptom. From the healthy structure of these tumours, there is every reason to believe an operation would have been crowned with success, had an opportunity been presented before the surface of the mammæ had begun to ulcerate, or the constitution of the patient been shattered by disease.

ART. VIII. *An Endeavour to show that the Cholera, which existed on Folly Island, near Charleston, neither Arose from nor was Propagated by Means of Contagion.* By E. C. KECKELEY, M. D. of Charleston, S. C.

THE brig Amelia, Captain Dickinson, sailed from New York on the 19th of October, 1832, bound to New Orleans, with one hundred and odd passengers, of which number three or four only were cabin-passengers, the remainder steerage. The voyage was boisterous in the extreme, and they were much confined below. After being at sea six days, cholera broke out among the steerage passengers. The captain put in into Five-fathom Hole, intending to come into port on account of the leaky condition of the brig; but some accident happening to the cable, he was compelled again to put to sea. In crossing the bar the brig thumped several times severely, and caused the leak to increase to such a degree, that it was deemed necessary to run her ashore on the beach of Folly Island, to save the lives of the crew and passengers. This occurred on the 31st of October, 1832. From the commencement of the disease up to this period twenty-four persons had

died, and several remained sick. When the brig grounded, there were six feet water in her hold. The captain and one of the passengers who visited the city authorities, described the condition of the wrecked as one of "pitiable destitution and distress, and as calling for immediate relief." In consequence of this report, blankets, tents, and necessaries, were sent down. Dr. ELFE, the deputy port-physician, visited the island, prescribed for the sick, and announced the nature of the disease on his return to the city.

A boat's crew of wreckers, who had gone down for the purpose of saving the vessel and cargo, having returned to the city, one of them was seized with cholera, and died in Elliott street, one among the most favourable places for the spread of a contagious malady. During this man's illness, he was visited by hundreds of persons, all of whom contagion took compassion on and spared, or who enjoyed the insusceptibility spoken of by the contagionists. The rest of the crew were ordered back to the island, and having embarked, two fell sick, and one died on the passage down.

"The wreckers were reported to have been of exceedingly intemperate and dissolute habits, and to have provoked the disease by their imprudence, exposure, and intoxication."*

"The case which terminated in Elliott street was brought on by extreme intemperance and sleeping in wet clothes, in addition to inhaling the foul air of the brig."†

Two physicians, Drs. JERVEY and PRITCHARD, were in the meantime sent down to afford the requisite medical attendance upon the sick. These two gentlemen having been worn down by the severity of their labours, were relieved by Dr. HUNT, after the lapse of a week. They, however, remained on the island until the total extinction of the disease, free from all complaint except bodily fatigue.

As neither the brig's crew and passengers, nor the wreckers, an additional number of whom had now gone down by permission of the authorities, were willing to remain on the island under quarantine restrictions, eighteen men were detailed from the city guard, under the command of a lieutenant, to perform the duty of a cordon sanitaire. These men were stationed about one hundred and fifty yards from the sick, but in going to and from the landing, they were forced to pass much nearer one of the buildings used as a hospital; nor was it possible to prevent their communicating with the passengers who were dispersed over the island.

The intendant, in his Proclamation, dated November 9th, says, "a portion of the guard have become so dissatisfied and disaffected, as to have formed a resolution to quit the island." "Notwithstanding-

* Intendant's Proclamation to the Citizens.

† Report of Board of Health.

ing the guard were forbidden to leave their posts, they removed to the other end of the island, and left it unprotected." "The anxiety of the crew and passengers to get off was so great, that it was feared that desperate measures would be resorted to."*

Of four negroes, the *only persons* left on the island by its proprietor, Mr. Milne, three died, one a child and two adults. Of the wreckers *eight* died. Of the guard employed on duty, every man was reported to have been more or less affected with symptoms of cholera, with the exception of the commanding officer; *nine* were reported as seriously attacked, and *one* died. On the 8th of November the wreck was burnt. On the 10th Dr. Hunt's nurse, who, the week previous, had diligently attended on the man who died in Elliott street, died. After the 17th no more cases were reported, the weather about that time becoming remarkably cool. On the 19th the surviving passengers took passage in the Cicero for a southern port. They were *twice* afterwards shipwrecked—once on the Bahamas, and once on Walker's Key, Florida, in neither of which instances did cholera show itself.

The preceding is a brief history of cholera from the time it first appeared on board the *Amelia* at sea, to its total extinction on Folly Island. By some it has been supposed to favour the belief of the contagiousness of that disease. I will now endeavour to show that it does not, and that every portion of it may be explained without the aid of contagion.

That I may not be misunderstood, it is proper that I should explain what I mean by contagion. Whenever, during the continuance of a disease, a deleterious agent is secreted by the patient's body, which, when brought to act on a healthy individual, will produce a disease specifically similar to the one from which it derives its origin; such agent is called contagion, and the disease with which the patient is affected, is termed a contagious disease. Infection, the variety which has been denominated idio-miasma, is generated by the decomposition of the natural exhalations and excretions of the human body in a state either of health or of disease. If strict attention be paid to the cleanliness both of persons and of things, and if free ventilation is enjoyed, idio-miasma will never exist in any place. It is *always* the result of inattention to cleanliness and ventilation. That cholera has been, and may be produced by infection, I freely admit; that it has ever been produced by contagion, I deny.

The portion of the passengers of the *Amelia*, among whom cholera first appeared, were predisposed to it before they left New York. It is a fact, that previous to, and during the invasion of any place by

* Intendant's Proclamation.

the disease, the inhabitants *generally* are, to a greater or less degree, affected with “cholérine.”* In proportion to the severity and obstinacy of the symptoms constituting cholérine, so is the predisposition to cholera greater or less. It is undeniable, that the class† to which the steerage passengers belonged are always *the first* victims of cholera. This need not be wondered at, when their habits and other circumstances are taken into consideration. Some of the passengers had the disease before sailing. If a predisposition was laid in New York, and every thing warrants such a conclusion, it requires no stretch of the imagination to discover why cholera made its appearance on board the brig. From the tempestuousness of the voyage, the passengers were *much confined* below. The voyage was *unusually* long; hence arose the ill-ventilation and filth. To these may be added bad diet.‡ It cannot be doubted, that the most influential of the causes of cholera, mental anxiety, was also present. These acting upon the predisposition, excited it into action, and cholera was produced.

I consider the remaining part of the voyage as a *strong* argument against the existence of contagion. Although every circumstance which was requisite to render contagion active was present, yet only twenty-four died in seven days. Although more than one hundred persons were confined in the hold of the brig surrounded by the diseased, and although no efforts were, or could be made to arrest the progress of the malady, only a comparatively small number died. Was a better opportunity ever afforded for the extension of a contagious disease? I suppose the argument of “insusceptibility” will be offered in explanation. It would be much better to suppose that the disease, true to its character, selected its victims, or that contagion had nothing to do in the matter.

The cause of cholera among the wreckers has already been pointed out. They were “of exceedingly intemperate and dissolute habits, and provoked the disease by their imprudence, exposure, and intoxication.” “The case which occurred in Elliott street, was brought

* In this city, during the month of July, 1832, sixty-eight cases of common cholera morbus were reported by less than twenty-eight physicians.—(*Journal Medical Society.*) Affections of the bowels continued to prevail till winter. Persons who previously had been in the habit of eating the most indigestible articles without any bad effects resulting, could no longer do so. Whence arose this state of things? Several cases occurred which very much resembled Asiatic cholera. Was it possible for contagion, which, according to the contagionists, existed in great abundance in New York at the time, to extend its baneful influence across the Atlantic to this city? *Causa latet, vis est notissima.*

† Emigrants. Irishmen who were going to work on the Levee at New Orleans.

‡ Principally Irish potatoes.

on by extreme intemperance, and sleeping in wet clothes, in addition to inhaling the foul air of the brig." By the phrase "foul air," it must not be supposed that a contagious atmosphere, or an atmosphere loaded with contagion, is meant. The air of the brig was rendered "foul" by the number of persons who had been crowded together in her, and by filthiness. The air may have been loaded with idiomiasma, because every thing concurred to produce it, and in this way I account for the almost instantaneous attack of the wreckers after going on board. It may be asked, why was cholera produced, and not any other disease? I answer, because there was a predisposition to that particular form of disease. It cannot be denied, that those whose digestive apparatus is most deranged are most liable to become affected with cholera, and vice versa. Intemperance deranges the organs of digestion to an extreme degree. These in the wreckers being more disposed to disease than any other portion of their bodies, became affected by the causes which were present, and yielded to their influence. In all probability they might have escaped, had they laid aside their evil practices. They continued to be intemperate, and exposed themselves more than they had for some time been accustomed to do. These added to the causes already noticed, called the predisposition into action, and cholera was the result.

It is unnecessary to notice the remaining part of the history in detail. If I have shown that cholera was neither produced nor continued by contagion, so far as I have gone, it is established that it did not afterwards extend itself by that means. A disease which does not extend itself by contagion at one time, when all things are favourable, cannot do so at another time, when things are less favourable.

The remaining cases which occurred, may be divided into two classes. The first class includes all those persons who were attacked after having gone on board the brig. I have already shown that causes sufficient for the production of cholera existed in her. It is necessary to seek out the predisposing causes. A considerable degree of anxiety was manifested by all to leave the island. The guard were so disaffected and dissatisfied, that, contrary to positive orders, they left their post, and went to another part of the island, leaving it unguarded. This was the reason why the intendant called upon the citizens to assist in guarding all points of the city where persons coming from the island might land. This was the reason why the citizens were called upon to be on the alert, and to impale upon their bayonets the monster contagion, if it should attempt an ingress into our city. The intendant feared that desperate measures would be resorted to by the crew and passengers of the *Amelia*, and some others on the island, such was their anxiety to be freed from quarantine. Many were suf-

fering from hope deferred. Many had lost friends and relatives. Disease and death in its most terrible forms, stared all in the face. These were the causes which predisposed, and as soon as exciting causes were applied, disease was manifested.

The second class comprehends all those who were attacked, but who did not visit the brig. The predisposing causes have been already mentioned. I will here state two facts, which could not properly be noticed elsewhere. It was with difficulty that persons could be obtained to bury the dead, and when this last favour was performed, it was done *very slightly*. May not the latter circumstance have had some influence in keeping up the disease? The greater portion of those on the island were lodged in tents. This fact is of some importance, if it be remembered that the sea air is highly injurious during autumn, from its dampness and chilliness.

The predisposing causes being known, it is necessary to look for the exciting. In the present instance, there is but one exciting cause, idio-miasma. It may be, that there were others, but they are not known. From the very nature of things, the formation of idio-miasma could not be prevented. Nurses were wanting, and cleanliness *could not* be observed. I am borne out in my opinion by the fact, that the disease declined, and ceased altogether, as soon as the weather became cool. The predisposing and the exciting causes being known, there is no difficulty in discovering why persons became affected, although they did not visit the brig, the fons et origo mali.

Charleston, May 25th, 1834.

ART. IX. *Remarks on Lithotomy.* By C. R. FINLEY, M. D. Surgeon U. S. Army.

UNTIL the operation of lithotrity shall have reached that degree of perfection which will cause it entirely to supersede lithotomy, any suggestions which may have a tendency to alleviate the suffering, or diminish the fatality attendant on the last-mentioned operation, are entitled to the attention of the profession. With those objects in view, the following brief remarks on the present mode of preparing a patient for the knife, and the treatment subsequent to the operation, are respectfully submitted.

We are directed, and I believe it is a direction generally, if not universally given in the schools, to compel the patient to retain his urine for several hours previous to the operation, that the bladder may be properly distended; and in order to insure this result, we are told to pass a ligature round the prepuce, and place the patient in

charge of an attendant to prevent its removal. Under such treatment, what must be the state of the patient when placed on the table? Will not his system be deranged by febrile excitement and nervous irritability, and his bladder, especially that part immediately concerned in the operation, in a state of high irritation, and if not inflamed, wanting only the application of the knife or gorget, together with the passage of the urine over the recently-divided parts to produce that state of inflammation so justly to be dreaded? Now, suppose, instead of compelling the miserable patient to retain his urine, which is a task peculiarly difficult and distressing to the calculous patient, and rendered doubly so to him through the terror excited by the approaching operation, we were to produce the proper degree of distention by injecting a bland mucilaginous liquid into the bladder after the patient is laid on the table, would not the ill effects above-mentioned be avoided?

With regard to the after treatment, I would inquire why, in the lateral operation, (to which only these remarks are intended to apply,) the patient being laid on the sound side, the catheter passed through the urethra into the bladder, and permitted to remain there, the wound may not be closed and healed as far as practicable by the first intention? an event which would be much facilitated by the use of the mucilaginous injection, as the distending fluid, instead of urine—infiltration of urine, from the necessity of enlarging the incision in the bladder, would be much less likely to occur. To protect the edges of the wound from the roughness of the calculus, should be another important consideration; otherwise, an incised may be converted into a lacerated wound. This, in the majority of cases, may be effected by the use of an instrument invented, I think, by Dr. GIBSON, Professor of Surgery in the University of Pennsylvania; it consists of a small sac, attached to a handle of six or eight inches in length; the mouth of the sack is composed of a firm, elastic substance, which can be expanded or contracted at pleasure, by a simple mechanical contrivance in the handle. The sac, in a state of contraction, may be introduced through the wound into the bladder, then the mouth being permitted to expand, it may be used as a scoop if it is found necessary to break the stone, or the calculus being seized by the forceps may be placed within the sac, and the mouth being thus closed, the instrument may be withdrawn, presenting only the soft texture of the bag to the edges of the wound. It is supposed, that by adopting the above measures, inflammation of the bladder and of the peritoneum, the most fruitful sources of the fatality consequent to this operation, will be in a great measure prevented.

ART. X. *Cases of Neuralgia, treated by Galvanism.* By THOMAS HARRIS, M. D. Surgeon U. S. Navy, and one of the Surgeons of the Pennsylvania Hospital.*

DEAR DOCTOR—Agreeably to your wish, I send to you a brief statement of the cases of neuralgia which I placed under galvanic treatment.

In June, 1831, I was requested to visit Mr. J. L. aged thirty-eight, affected with epilepsy of several months continuance. His paroxysms occurred daily, were very violent, and were accompanied with such nervous irritability, that he could not endure without complaint the noise of walking across the room. For several years previously to his epileptic attack, he complained of constant pain in his head: this pain, which appeared neuralgic in its character, continued with little intermission, and was particularly violent when I was first consulted.

After making myself acquainted with the treatment which had been pursued in his case, and finding that all the usual remedies had been used without benefit, I determined to try the galvanic apparatus of MANSFORD.†

After this had been applied a few days, the nervous irritation and neuralgic pains began to diminish, though no perceptible impression appeared to be made on his epilepsy. After the expiration of two weeks his neuralgic pain ceased entirely, and his epileptic paroxysms became much less frequent and violent. The weather being warm, the meat became so speedily offensive that he begged me to discontinue its use. Though the instrument did not cure the disease for which it was particularly applied, yet it entirely relieved the patient of the neuralgia.

This unexpected result determined me to make another trial of its utility in the next case of neuralgia that came under my treatment. In July, 1832, I was consulted by Dr. OTTO, in the case of Master J. S. aged eleven years, who had been afflicted with violent neuralgia of his head. The paroxysms always occurred at night when in bed, and continued with increasing violence for eleven months. In the day-time he complained of great lassitude, and was always depressed in spirits.

* This Article ought to have immediately followed Dr. Chapman's, (see Art. I.) but was not received in time.—ED.

† For Mansford's directions for the application of this apparatus, see p. 311, of this No.

In this case there had been used leeches and blisters to the back of the neck, chalybeates, narcotics, and most of the other agents usually recommended in this disease.

I suggested to Dr. Otto the use of the galvanic apparatus, to which he readily assented. It was accordingly applied in the manner already detailed. On the eleventh day of its application the pain entirely ceased, and although two years have elapsed, he has had no return of it.

After fatiguing study he has several times had a return of his lassitude and gloomy spirits. He is now, however, in fine spirits and robust health.

In January, 1833, I was consulted by Mrs. R. aged forty-eight, in relation to a neuralgic affection of her head and face of eight years continuance. She had been under the care of one of our most eminent physicians, who had assiduously applied the usual remedies without effect. She had intervals of ease on two occasions during the warm months.

On the fourth day after the application of the galvanic apparatus the pain began to diminish, and on the twenty-third day it ceased entirely.

In the month of April following she had a slight return of it, occasioned by exposure during a cold, inclement day. This attack yielded to a reapplication of the apparatus for ten days. She has had another slight return of the disease this spring, but which has been again subdued by galvanism.

In May, 1833, I was applied to by Miss E. D. of this city in case of neuralgia of fourteen years standing. This case in point of acuteness of suffering, was of a most aggravated character. It was diffused over every part of the body. The head, face, tongue, heart, stomach, uterus, and indeed almost every region of system, was by turns invaded by this terrible disease. The galvanic apparatus was applied in this case, and faithfully continued for five weeks. The effect was to mitigate the violence of the disease, but not to cure it.

In the same month I applied the galvanic apparatus to S. T. aged thirty years, a female patient in the Pennsylvania Hospital. She was affected with general neuralgia of six months standing. The galvanic apparatus was applied in this case, and continued for weeks without producing any perceptible benefit.

In November, 1833, Mrs. — of New York, desired my advice in a case of neuralgia of fourteen years standing. Like the two preceding cases every part of the body was by turns severely affected by this disease. The failure of this agent in the similar cases gave me

little encouragement to hope for success in this. At the request of the suffering lady, however, the apparatus was applied and continued with the exception of short intervals for five months. The lady has returned to New York with the impression that she has been in some degree relieved, but is far from being cured.

In February, 1834, the galvanic plates were applied in the case of Miss P. of Philadelphia, who had been affected with neuralgia of the face for two years. After the tenth day the pain entirely ceased, and she continues quite relieved.

In May, 1834, Mr. T. W. of Maryland, consulted me in a case of neuralgia of the head and face of eighteen months continuance. He had been under medical treatment during the whole of this period, but could not state the names or nature of the medicines which he had taken. His pain was very acute; his nights were sleepless; his digestive functions much impaired, with obstinately constipated bowels. His extremities were cold, and his head inordinately hot. A few ounces of blood was taken from the back of his neck, aperients were given to regulate his bowels, and his feet were placed nightly in a mustard foot-bath. On the third day the galvanic apparatus was applied, and was continued two weeks before any mitigation of the pain was observed. At the expiration of five weeks the patient was entirely relieved of his neuralgia, and his health in every particular entirely restored. Within a few days he has returned to his native state in fine health and spirits.

Of the eight cases which have been treated with the galvanic agent five have been entirely relieved. In every case in which the disease was located in the cerebral nerves, this simple and apparently feeble galvanic apparatus has accomplished cures. On the contrary, where this disease was diffused throughout the body, or located in the spinal nerves, it has failed.

At some future period, and after further experience, I propose communicating to you my views in regard to the *modus operandi* of galvanism in the cure of neuralgic affections.

Very truly,

THOMAS HARRIS.

Dr. ISAAC HAYS.

Philadelphia, June 30th, 1834.

ART. XI. *Instance of Destruction of the Uterus, Perineum and Rectum, after Delivery, with Recovery.* By Dr. JOHN SWETT, of Ridgway, New York.

A WOMAN, aged thirty years, of robust constitution, was delivered of her first child on the 28th day of June, 1830, full-grown, after thirty-six hours severe labour. During this preternatural labour blood was abstracted, and three or four doses of opium administered; forceps of a bad construction were unsuccessfully applied by a physician little acquainted with the use of instruments; the parturient pains immediately ceased, palsy and weakness of the lower extremities ensued, with pain in the back and hips. The patient was left in this situation, by her attending accoucheurs, several hours, whilst they reposed on their beds! The child was born with little manual assistance, and without an effort of the parent.

On the 2d day of July I was called and visited this unfortunate female, and found her labouring under very acute pain; pulse one hundred to the minute, vomiting a green and dark-coloured bile. Her friends had despaired of her life.

In this case I administered the sulphate of magnesia in a cathartic dose, which immediately prevented the vomiting, and in a few minutes she requested food, which being allowed her, was found agreeable to the stomach; and as often as the vomiting took place, the same medicine was administered with the same effect as above stated.

On inspection I found the labia pudendi and posterior region in a gangrenous state; for this I prescribed yeast and charcoal, internally and externally, and also the cort. peruv. flav. acidulated with the sulphuric acid, together with wine to support the system.

The 12th day of the same month I found her labouring under tympanitis; I therefore discontinued the former medicines, and administered the ol. ricini freely; directed ablutions of cold water, and a bandage to be applied to the abdomen; in a few hours the bowels were evacuated, a gentle diaphoresis appeared, and she was again relieved from pain.

On the 13th it was found that the fundus uteri had passed into the vagina, and out at the os externum: by a little assistance of the nurse the whole uterine system separated, leaving its destined place of abode.

15th. The rectum parted a few inches above the pubes, and was discovered sliding down and passing out between the labia pudendorum: the nurse in my presence took hold of and gently extracted it, the lower end easily separating from the sphincter ani, and with-

out pain to the woman. At this time I proceeded to a further examination, and found the perineum destroyed, so much so as to leave but one orifice to the abdomen, (and that) extending from the os coccygis to the ossa pubis. The sphincter urinæ also had lost its power of contraction, and she labours under an incontinence of urine and fæces. She suffered several weeks with cruritis or phlegmasia dolens, partially submitting to the antiphlogistic plan of treatment.

In the month of November following, by an inspection I found the pelvis to be healed, and could of a certainty discover the purulent discharge flowing from the abdomen. A portion of the intestine had visibly descended into the pelvis three or four inches, folded down, and hung pendulous over the sacrum in the vaginal cavity, and which was sensibly affected with cold air; for this a pessary of fine sponge was applied, and at length found useful in retaining the intestine in the abdomen, and in effectually excluding the cold air. So great was the destruction of parts, and so extensive the orifice, that the eye could trace the whole internal cavity of the pelvis so distinctly in this case that I had ocular demonstration both externally and internally, that the rectum as well as the whole uterine system had separated and were removed. Another fact of which I was informed, and had no reason to doubt, and which should by no means be omitted, is, that the fæces had ever from the time of the above occurrence passed off between the labia.

Notwithstanding all the sufferings of this patient in the entire loss of (these) important viscera, the great length of time she was sick confined to her bed, and the continued inflammation of the abdominal viscera keeping up a purulent discharge, yet her strength, by the assistance of a remarkable appetite, held out, and health was fast returning.

About the 1st of January, 1831, the mammæ began to perform the office of secretion, so that milk flowed in profusion, and continued so about two months and then ceased. This phenomenon happened six months after the extraction of the foetus, apparently producing no material change in the other functions of the system either by its continuance or cessation. Health now returned with bloom and vigour.

February 16th, 1832.—I am informed by the father of this woman that she can now in some small degree command the urinary organs, and feels a sure confidence that in one year more she shall possess the full command: this is in my opinion possible, but over the fæces she can never have controul. The inconveniences which she must ever for life sustain from incontinence of urine and fæces, are very great: yet her health in every other respect is unexceptionably good to this day, viz. March 24th, 1833.

REVIEWS.

ART. XII. *Embryologie ou Ovologie Humaine, contenant l'Histoire Descriptive et Iconographique de l'Œuf Humain.* Par ALF. A. L. VELPEAU, Chirurgien de l'Hôpital de la Pitié, Agrégé à la Faculté de Médecine de Paris, Professeur d'Anatomie, d'Accouchemens et de Médecine Opératoire, Chevalier de la Légion d'Honneur, Membre de l'Académie Royale de Médecine, de la Société Médicale d'Emulation de Paris, Correspondant des Sociétés Médicales de Tours, Louvain, Rio Janeiro, &c. &c. Accompagnée de quinze planches, dessinées et lithographiées, par A. CHARAL. Paris, 1833. Fol. pp. 104.

Embryology, or Human Ovology, containing the Description and Iconographic History of the Human Ovum. By ALF. A. L. VELPEAU, &c. &c.

Graphic Illustrations of Abortion and the Diseases of Menstruation. Consisting of twelve plates from drawings engraved on stone, and coloured by Mr. J. PERRY, and two copperplates from the Philosophical Transactions, coloured by the same Artist: the whole representing forty-five specimens of Aborted Ova and Adventitious Productions of the Uterus, with preliminary Observations, Explanations of the Figures, and remarks, Anatomical and Physiological. By A. B. GRANVILLE, M. D., F. R. S. &c. London, 1834. 4to. pp. 52.

M. VELPEAU is one of the most prolific, and at the same time, most distinguished writers of the day. Within the last four years he has published three large works, besides others of a minor description:—an Elementary Treatise on the Art of Midwifery, in two volumes, 8vo.—New Elements of Operative Medicine, (with an atlas of twenty plates, in 4to.) in three large volumes, octavo;—and a Treatise on the General, Surgical, and Topographical Anatomy of the Human Body, in two volumes, 8vo., with an atlas of fourteen plates, in 4to.;—all of which have been translated in this country: besides a Memoir on the Faulty Positions of the Fœtus, in 8vo.—a Dissertation on the Generalities of Surgery, and on the Plan to be Pursued in Teaching the Science, in 4to.—Researches on the Spontaneous Cessation of Primary Traumatic Hæmorrhages, and on the Means which may, in certain Cases, be substituted for the Ligature

of Arteries, in octavo; and a Dissertation on the Generalities of Physiology, in quarto; besides the large work now before us, and to which we are desirous of attracting the attention of the profession.

But, although prolific, it must not be presumed, that the productions of M. Velpeau bear signs of hasty concoction. His mind is manifestly of no common order. It is grasping, and retentive; and the materials which he treasures up, are so arranged as to be easily adduced. His productions, too, are chiefly on topics on which he has been accustomed to deliver lectures, so that we can, in some measure, account for the rapid succession of publications—all full of important facts and speculations—and in every way creditable to the author.

That the work before us is no hasty production, and has undergone the “*limæ labor ac mora*,” is sufficiently shown by the fact, that the ideas on which it is founded, were communicated to the *Académie de Médecine* of Paris, in 1824, to the *Société Philomathique*, in 1826, 1827, 1828, and 1829; and the work was subjected, almost in its entire state, to the *Académie des Sciences*, in 1827 and 1828. He asserts, too, in his introduction, that it is the fruit of researches into which he entered so long since as 1821.

As our object is to give a concise account of the more prominent topics insisted on by M. Velpeau, and to inquire into some of the obscure, but deeply interesting questions of foetal existence, we shall pass by, without further notice, the controversial preface, which occupies twenty-eight folio pages, and is dedicated to “a critical review of the opinions emitted before and since his first publications on the principal points canvassed in the work.”

The first section is on the appendages (*annexes*) of the foetus,—the membranes, vesicles, placenta, and umbilical cord.

The membranes consist of the chorion and amnion; and although furnished by the uterus, yet being a contingent on the state of gestation, the decidua may be added. This last membrane has long been a subject of controversy, and still continues to be so;—various opinions having been entertained regarding the formation of the decidua reflexa especially; each of which has, even now, numerous adherents.

Dr. WILLIAM HUNTER, to whom M. Velpeau awards the discovery of the decidua, conceived it to be thicker the nearer to the time of conception, and that it became gradually thinner during pregnancy; still existing, however, during delivery, and being then thrown off—whence its name *decidua*—and renewed at each pregnancy. He considered it to have three apertures; one corresponding to the os uteri,

and one to each Fallopian tube: that at first it consisted of one layer, adherent to the uterus; but subsequently a second was formed, which adhered to the ovum, and which he called *tunica decidua reflexa*.

The opinions of most of the anatomists of the present day, are in favour of one of two views. It is maintained by some, that one of the first effects of conception, is to cause the secretion of a considerable quantity of a sero-albuminous substance from the inner surface of the uterus; so that the organ becomes filled with it. On the first arrival of the ovum in the uterus, it falls into the midst of this secretion, gradually absorbing a part by its outer substance for its nutrition. The remainder is organized into a double membrane,—one corresponding to the uterus, the other adhering to the ovum. This sero-albuminous substance is conceived to plug up both the orifices of the Fallopian tubes, and that of the uterus.

By others, it is held that the decidua is slightly organized, prior even to the arrival of the ovum, lining the whole of the cavity, and being devoid of apertures: so that, when the ovum passes along the tube, and attains the cornu of the uterus, it pushes the decidua before it; the part so pushed forwards constituting the *tunica decidua reflexa*, and enveloping the whole of the ovum, except at the part where the decidua leaves the uterus to be reflected over it. This is the seat of the future placenta. Such is the opinion of our author.

“Impregnation,” he remarks, “occasions a specific excitation in the uterus, promptly followed by an exhalation of coagulable matter. This concretes, and is soon transformed into a kind of cyst or ampulla, filled with a transparent or slightly rose-coloured liquid. This species of bladder is in contact with the whole surface of the uterine cavity, and extends sometimes into the commencement of the tubes, and most frequently into the upper part of the cervix, in the form of solid, concrete cords; but it is never perforated naturally, as Hunter thought, and as Bojanus, Lee, and some other authors still think.

“When the ovule has passed along the tube, it depresses this membrane, glides between it, and the uterus, to the inner surface of which it ultimately glues itself. After this, the decidua is formed of two continuous portions, one very extensive, lining the whole of the womb, except the part which is in contact with the germ, and bearing the name—*uterine, true, or external decidua*;—the other, smaller, and pressed upon by the free half of the fecundated vesicle, which it envelopes, constituting the *decidua reflexa, or interna*. It is this, which Messrs. Owen and Lee call *ovuline*, but which ought rather to be called *epichorion*. The extent of the former increases in the same proportion as the uterus. The augmentation of the second necessarily follows that of the germ. Hence the cavity which separates them, and which is nothing more than the misshapen cavity of the primitive ampulla, is greater the less the time after the first periods of gestation.

“The *decidua uteri* retains a pretty considerable thickness, especially around the placenta, until the end of gestation. The *epichorion*, on the contrary, ge-

nerally becomes insensibly thinner, and thinner, so that, at the full period, it is sometimes of extreme tenuity.

“Towards the third or fourth month,—a little sooner or later,—they touch and press upon each other; and remain in a more or less perfect state of contiguity, until the expulsion of the secundines, but they are never confounded, although Hunter, and the majority of those who have treated the same subject since his time, have asserted the contrary. If Mr. Lee has not been able to separate them after the fourth month, it has been owing to his not having taken into account the reflected layer, which rests strongly glued upon the chorion, when we begin to detach the decidua uteri from it, and to his having evidently confounded, in the outset, this last with the internal membrane of the uterus.” p. 3.

Between the decidua and false membranes, which are the result of inflammation, M. Velpeau thinks there is no analogy. He regards it as a “simple concretion”—a layer without regular texture, whether we regard the decidua vera or the reflexa; and he argues, that if it were really organized, if it were the seat of exhalation, it ought to contract some adhesion, and be intimately confounded with the inner surface of the uterus, or the circumference of the chorion, which it lines, and covers for nine months.

“Is it from the placenta that it receives its vitality? It is developed for a long time before the placenta begins to be formed. This body can generally be detached from it, as well as the whole of the ovule, up to the second month of gestation, without any thing being destroyed or torn, which could give the least idea of a determinate organization. It is, moreover, sufficient to recollect, that the structure of this singular membrane is precisely the same at the moment of parturition, as at the beginning of pregnancy—a period at which most authors agree that it has no true texture.” p. 7.

Being consequently, in his opinion, the “product of an excretion” from the uterine cavity, M. Velpeau gives it the name—“*anhistous* membrane, (from *αν*, privative, and *ιστος*, a web,) or “membrane without texture.” There has, indeed, been a striking dissatisfaction with the name decidua. DUTROCHET has proposed to call it *epione*, BRESCHET, *perione*, and BURDACH, *nidamentum*.

Its use, the author thinks, is to retain the fecundated ovum to a given point of the uterine cavity; and if M. Velpeau's views of its arrangement be accurate, the suggestion is good. In favour of this arrangement a good deal may be said. If there were apertures in the decidua, corresponding to the Fallopian tubes, it would seem that the ovum ought frequently to fall from one of them into the sero-albuminous matter at the cervix uteri, an attachment of the placenta over the os uteri would be likely to occur more frequently than it is known to do. Under M. Velpeau's doctrine, the attachment of the

placenta ought rather to be near the cornu of the uterus, which is known to be the case.

It is not so easy to subscribe to the author's views regarding the "inorganic" nature of the decidua. Many excellent observers have asserted, not only that this membrane exists between the placenta and the uterus, which M. Velpéau's view, of course, renders impossible, but that numerous vessels pass between it, the uterus, and the placenta. We know, too, that the safest and most effectual mode of bringing on premature labour, is by detaching the decidua from the cervix uteri, or, in other words, by breaking up the vessels that form the medium of communication between it and the lining membrane of the uterus. How could this have any effect unless such vessels existed? It may be said, indeed, that the mere separation of the unorganic pellicle, as M. Velpéau designates it, may be a source of irritation, and excite the uterus to the expulsion of its contents; and we do not deny that this is possible. Yet M. Velpéau affirms—"no tissue attaches it to the uterus. It adheres to the inner surface of the organ merely in the manner of an excreted, membraniform shell, (*plaque.*")

As regard the *chorion*—the outermost of the foetal membranes—much difference of opinion has existed; some supposing it to consist of several layers—others, as M. Velpéau, of one only. The conclusions to which his observations lead him, are as follows:—

"*First.* The chorion—in the human species—is a simple round vesicle."

"*Secondly.* Its villousities are not vessels, but merely small, granulated filaments, which serve at a later period for the development of the vessels of the placenta, on the portion of the ovule that touches the inner surface of the uterus or corresponds to the root of the cord."

These villousities, we think it probable, act as true sponges, to absorb the necessary nutriment for the maintenance of the life of the embryo.

"*Thirdly.* To the granulations of its filaments ought to be referred the origin of the hydatids *en grappe*, sometimes met with in the womb, or forming part of an hydatid mole."

M. Velpéau does not regard these hydatids as vesicular worms, but as arising from an "abnormal development of the granulations, or rather as the product of an aborted ovum, whose small, gangliiform bodies have assumed an increase not common to them; and he affirms, that he has a number of preparations in proof of his views.

It has always appeared to us extremely questionable, whether these false conceptions, as they have been considered, are really ace-

phalocysts; and this doubt we have been in the habit of expressing for many years in public; but still the precise mode in which such morbid formations arise is not easy of decision. It *may* take place in the way mentioned by our author, but *we* wait, prior to deciding, for the "particular memoire," which he proposes to issue on the subject.

"*Fourthly.* In the normal or regular state, half, at least, of these gangliform bodies implant themselves in the epichorion, and cease to be developed; whilst the others, in contact with the uterus, or corresponding to the vessels of the cord, constitute the rudiments of the placenta."

This view of the general anatomy and purposes of the granulations is peculiar to M. Velpeau. We shall refer to it presently, when we consider the anatomy of the placenta.

"*Fifthly.* The chorion is not an expansion of the skin, or of any part of the abdominal parietes, as many authors have asserted, and as I, at one time supposed; but it has, from the commencement of gestation, relations, and an intimate continuity with the cellular web of the cord, or of the umbilical vessels."

The opinion, that the chorion is an expansion of the skin, is as old as HIPPOCRATES, and is generally entertained. M. Velpeau himself, as he honestly admits, published some cases in 1824 in support of the view; and it has been maintained, amongst others, by MONDINI, MOJON, ROUX, CHEVREUL, and DE BLAINVILLE. The reasons, however, advanced by M. Velpeau, for the opinion he now entertains, are cogent.

"The chorion forms part of the ovule from the commencement of gestation. The parietes of the abdomen are not developed until after the spine. Before the appearance of the skin the chorion presents the same characters, and the same form as it possesses afterwards. The chorion then, and the skin of the embryo are two parts independent of each other.

"In the first month of its development, the chorion ought to be studied, in order to form an exact idea of its connexion with the other parts of the ovule. The umbilical cord, then very small, appears to be only a small cellular stalk, which terminates in the chorion at one extremity, and in the concavity of the rachidian circle at the other. The amnion attached to this stalk at one point only, which is very close to the embryo, appears to be pierced by it. If we did not admit that the chorion is independent of every other part of the fœtus, it might be considered as the expansion of the cellular web of the umbilical and placental vessels; but as these canals do not appear until some considerable time after fecundation, it is evident that the chorion must serve them as a matrix or canvass, and cannot be produced by them. At a subsequent period, it is so intimately confounded in the cord with the amnion, and especially with the ring of the umbilicus, that it becomes impossible to deny with certainty its continuity with the integuments." p. 19.

"*Sixthly.* It is not multifoliated at any period of its development."

The idea has generally been, amongst descriptive anatomists, that the chorion consists of several layers. The author, however, accords with HUNTER, that there is but one. Many embryologists still maintain the opinion of HALLER, RUYSCH, HEWSON, and others. Amongst these may be named CHEVREUL, MAYGRIER, and DUTROCHET. "In the human ovum," says the last distinguished observer, "there is an *exochorion*, that is, an outer chorion, formed of several layers, and an *endochorion* or inner chorion, resulting also from the *adossement* of several primitive layers." There is, however, as M. Velpéau has correctly observed, after Dutrochet, great obscurity thrown over this minute and intricate point of foetal anatomy, owing to the same name having been employed for foetal envelopes very different from each other, whilst different names have been given to the same membrane.

M. Velpéau asserts, that at fifteen days, and three weeks, as at two months, the chorion is simple in the human species, and—

"If, at a later period, other layers are united with it, they belong to bodies not yet described, or which cannot, under any pretext, be considered as its dependencies."

"*Seventhly.* It does not receive either vessels or nerves, which belong properly to it."

On this point great dissidence likewise prevails; and although it might seem that anatomy should be one of the "exact sciences," there is hardly any which is more unfixed, if we regard the different tissues, which are so minute as to require the aid of the microscope. In such cases, wide scope is left for the imagination, and the reckless theorist can devise any arrangement, which will best serve his purpose. Hence it is, that we have the presence of blood-vessels, nerves, and absorbents admitted "from observation" by some, and as strenuously denied by other "*transcendental* anatomists," as they have been lately called in the land of imagination and metaphysical physics. Before we can learn the physiology of organs, it is of course necessary that such organs should be proved to exist; yet the *onus probandi* is far more difficult than the gratuitous belief, that such an organization may be, and is present, and accordingly it is eagerly embraced, provided the assumption will throw any light on the hypothesis of the speculatist. The crying evil with the anatomist, and still more with the credulous physiologist, is, that he knows too much, and too readily takes for facts the assertions and speculations of his distinguished brethren; and nothing but a rational scepticism will correct the evil, and bring him back to the lessons of true observation. It would be an ungracious task, but science could not fail to reap important advantages from it, were some competent indivi-

dual to sift the known from the unknown, and the doubtful, and to classify them accordingly. Fresh experiments might then be instituted, which would substitute certainty in the place of doubt, and dispel that immense mass of false knowledge which yet exists, but which is every day yielding before the lights of more accurate observation and reflection.

The texture of the chorion, as well as of the amnion, M. Velpeau admits to be cellular, and if we call into our aid what analogy has suggested, we should be compelled to infer the existence of both nerves and blood-vessels, and that the membrane, like other varieties of cellular membrane—the serous, for example, is possessed of similar functions; and such is probably the case, even if we admit, with M. Velpeau, that no nerves or blood-vessels can be traced in it. We have strong evidence that both nerves and blood-vessels are present in parts where the anatomical analyst has not yet succeeded in detecting them in health; yet these parts are very sensible, and exhibit vascularity when inflamed. It is known, too, that many anatomists have taken the affirmative side of this particular question. CHAUSSIER and RIBES, for example, and Sir EVERARD HOME and BAUER assert, that they have detected nerves; whilst a host of inquirers have deposed to the presence of blood-vessels. WRISBERG and SANDIFORT are the chief authorities, however, on that side; whilst MAYER, our old preceptor, BECLARD, LOBSTEIN, and M. VELPEAU, have never succeeded in finding them.

“In refusing to admit blood-vessels in the shaggy coat of the human ovum,” says M. Velpeau, “I rest on the following points. First. No one has seen them so as to leave no doubt on the subject. Secondly. The ineffectual efforts made by M. Lobstein to discover them. Thirdly. My own observations: and Fourthly. I think I have found the reason which has deceived many observers who have admitted them.

“When we endeavour to separate the *decidua reflexa* from the outer surface of the chorion, we soon perceive an indefinite number of filaments passing from one to the other. These filaments, which are more numerous as we approach the placental surface, and the nearer to conception, and which Sandifort and many others have taken for vessels, are mere vestiges of the villous tomentum, which covered the outer surface of the ovule. Now, if a number of physiologists accord a sanguineous circulation and vessels to the chorion, it is because they believe their existence on the decidua demonstrated, and hence they have considered that such must be the case in the membrane immediately beneath it. But this argument falls to the ground, if we prove, as I think I have done, that the former of these laminæ is a mere anorganic concretion.” * * *

“The finest injections, the most careful dissections, both of the chorion itself, and of its filaments at an advanced period; and of its shaggy state, and its granulations at an early period, have not left in my mind the slightest doubt. With

the magnifying glass, or with the scalpel, these objects appeared solid, and tore like cellular tissue. I never was able to remark the slightest appearance of a canal." p. 21.

He remarks, however, in a previous paragraph, that he wishes it to be particularly understood, that his assertions apply only to the human female. "In the mare, the outer surface of the chorion is red and *vascular*, from the base to the summit of the ovum." A strong analogical fact, by the way, which ought to make us pause before we are satisfied that our limited powers of observation have proved the negative as regards our own species.

"*Eighthly*. It is of a cellular nature, and is formed by the same mechanism as the serous membranes."

We have already referred to objections which this conclusion suggests to the one preceding. To it, abstractly considered, no objection can be made.

"*Ninthly*. In all animals in which a decidua, or some analogous layer exists, the chorion forms the second membrane of the ovum, proceeding from without to within, and the first, when there is no anhistous concretion, (decidua.")

"*Tenthly*. At the full period, its outer surface, covered by the epichorion and placenta, is reflected over the root of the cord, which it covers as far as the abdomen of the fœtus. Its inner surface is every where in contact with the amnion." p. 23.

The *amnion*, although more frequently spoken of than the chorion, has been, perhaps, less accurately examined; and hence, according to M. Velpeau, almost all writers copy from each other in describing it. What has been said of the chorion, regarding the supply of nerves and blood-vessels, applies also to the amnion. Our author denies their existence in toto; yet, what is singular, he regards the liquor amnii as—

"The product of transudation, or of simple exhalation, like the serosity of the pleura, pericardium, peritoneum, or arachnoid; like the synovial humour of the tendinous sheaths, or of the articulations, and this perspiration has no need whatever of particular canals to effect it; it is a purely vital imbibition, and the filamentous matters that trouble it, the yellow or green flocculi sometimes found in it, belong in no way to it, and are nothing but portions of meconium, or of the *enduit* separated from the fœtus, or else of the vitriform substance, and of the vesicles, that exist primitively between the membranes."*

Yet all these exhalations require, in our view, the action of vessels to effect them. They must be derived *from the blood*, and therefore they must escape from the vessels in which it is contained. What

* *Traité élémentaire de l'Art des Accouchemens*. Tom. I. p. 253.

we have already observed regarding the non-detection of vessels containing blood—red or white—in the chorion, applies equally to the amnion; and the very fact of a fluid existing in its interior, which is admitted by M. Velpeau, to be exhaled from it, is an additional argument in favour of the presence of vessels.

The author's conclusions with regard to the amnion, in the work before us, are as follows:—

“1. The amnion or *agnelette* is the innermost, and deepest-seated membrane of the human ovum.

“2. In every case in which the germ is not altered, it is separated from the chorion by a space, which is at first very considerable, but which afterwards diminishes insensibly, from the first fortnight to the third or fourth month of pregnancy.”

“3. Its outer surface, although less smooth than the other, has neither cellular filaments nor vessels, which can unite it to the chorion.”

“4. Its inner surface is primarily very near the embryo, from which it is afterwards removed, in proportion to the development of the ovum.”

“5. It is not entirely correct to maintain, with Hippocrates, Harvey, and Burton, (as I believe I have demonstrated myself,) as Dr. Pockels has again asserted, that the amnion is originally continuous with the epidermis, of which it would be only a dependence, or which, in this way, would be produced by it.”

“6. In the first month it has no connexion except with the umbilical cord, which seems to perforate it in proceeding towards the spine, to be lost in some of the abdominal viscera.”

“7. At a later period, when the parietes of the abdomen are formed, it unites somewhat intimately with the epidermic layer of the embryo, or of the foetus, so that it is difficult not to admit a real continuity between the two layers.”

“8. It contains no vessels that are proper to it, and there never enters more than a single layer into its composition.”

“9. The connexions of the amnion with the embryo, in the other mammalia, are the same as in the human species.” p. 32.

The second chapter of the work is appropriated to the vesicles that are described as belonging to the human ovum; to wit, the *umbilical*, *allantoïd*, and *erythroid*.

The *umbilical vesicle* was unknown to the ancients; and amongst the moderns it is not universally admitted to be a physiological condition; but, on the contrary, is regarded as a morbid formation by many, and we are somewhat surprised to find M. Velpeau remark, that out of about two hundred vesicles, which he had examined in foetuses under three months of development, he had met with only thirty in which the umbilical vesicle was in a state that could be called natural. p. 39.

With such a fact before him it is not easy to understand how the

author could distinguish the physiological from the pathological condition. If the existence of the vesicle is a part of the physiological or natural process, the majority of cases ought to be healthy or natural; yet he pronounces the thirty in the two hundred to be alone properly formed, and of course one hundred and seventy to be morbid or unnatural.

The umbilical vesicle, according to M. Velpéau, is a small, puriform, round, or spheroidal sac; which, about the fifteenth or twentieth day after fecundation is of the size of a common pea. It probably acquires its greatest dimensions in the course of the third or fourth week. After a month he has always found it smaller. When it becomes reduced to the size of a grain of coriander, which generally happens about the fifth, sixth, or seventh week, it commonly ceases to diminish. After this, it becomes flattened, and disappears insensibly. At times, it is not found after the third month; whilst at others it is seen as late as six months. It is incontestably situated between the chorion and the amnion. Commonly, it is adherent either to the external surface of the amnion, or to the inner surface of the chorion; but at times it is situated loosely between them.

The characters of the *pedicle*, which M. Velpéau terms *pedicule vitellin*, and which attaches the vesicle to the embryo, vary according to the stage of gestation. At the end of the first month, it is not less than two, nor more than six lines long, and about a quarter of a line thick. Where it joins the vesicle it experiences an infundibuliform expansion; not so at the extremity which joins the abdomen.

Its continuity with the intestinal canal in man cannot, he conceives, be doubted. Before the parietes of the abdomen are completely formed, it is divided, as it were, into two portions by the amnion, which it seems to have pierced. Up to twenty or thirty days the pedicle is hollow. In two subjects M. Velpéau was able to press the liquid from the vesicle into the abdomen without lacerating any part. It becomes obliterated at a somewhat uncertain period. Generally, the canal does not exist longer than the expiration of the fifth week; and the obliteration appears to proceed from the umbilicus towards the vesicle, in proportion as the cord becomes complete, and it probably closes first at the ring of the umbilicus.

The parietes of the *vitelline pouch*,—as M. Velpéau also calls it,—from its analogy with the vitelline or yolk-bag of the chick,—are strong, resisting, somewhat thick, and difficult to tear.

As the umbilical vessel of brutes has been admitted to be continuous with the intestinal canal, anatomists have assigned to it and its pedicle three coats. Such is the view of M. Dutrochet. M. Velpéau

has not been able to detect these in the human foetus. He admits, however, “a *serous surface*, and a *mucous surface*, but not a *serous membrane*, and a *mucous membrane*, still less a *muscular coat*.”

The vesicle is evidently supplied with arteries and veins.

“I have observed them,” says M. Velpeau, “not only in the substance of the parietes of the vitello-intestinal canal, but also in those of the vesicle itself; twice in the latter, more than twenty times in the umbilical cord. In the first case, I have seen them form a beautiful net-work, and numerous arborescent ramifications, extremely easily traced without any particular preparation, and even with the naked eye. In the second case, they were reduced to two very fine trunks at the side of the vesicle, becoming gradually larger as they approached the abdomen. These vessels, of which Boehmer and Madei appear to have had some notion, which are somewhat coarsely represented in the work of Hunter, which Wrisberg and Blumenbach have described better, which Kieser, Ribes, and Chaussier have made known in France, and which many zoologists have regarded, and still regard, as the only means of communication existing between the embryo, and the umbilical vessel, are known in science under the name *ophphalo-mesenteric* vessels, but rather merit, in my opinion, the title *vitello-mesenteric*, or simply *vitelline*. From my observation, they do not proceed, as has been said, to empty themselves into the superior mesenteric vein and artery. I have remarked, that they communicate with one of the branches of the second or third order of these great canals, with those, in particular, that are distributed to the cœcum. I have often traced them from the abdominal cavity through the ring of the umbilicus, as far as one, two, and even three inches into the cord, in foetuses six weeks, two, and three months old. At these different periods, however, they ultimately disappeared, and were lost in the spongy tissue of the vitelline pedicle before attaining the vesicle, which must be attributed, doubtless, to the same causes that produced the obliteration of the vitello-intestinal canal. I have several times succeeded in injecting them, when they had the size of a large pear; but their delicacy is generally so great, that they readily give way, unless the greatest precautions be taken.” p. 44.

These vessels are regarded as the vessels of nutrition of the umbilical vesicle.

The fluid contained in it, which M. Velpeau calls the *vitelline* liquid, is supposed to possess similar uses with the *vitellus* or yolk in birds. In a favourable case for examination, M. Velpeau found it of a marked pale yellow; opaque; of the consistence of a thickish emulsion, and different in every respect from serosity, to which ALBINUS, BOERHAAVE, WRISBERG, and LOBSTEIN have compared it, and from every other fluid of the organism; and he regards it as a nutritive substance, a sort of oil, in a great measure resembling that which constitutes the vitelline fluid of the chick in ovo. Under this point of view its uses would appear to be obvious;—to afford a nutritive fluid for the development of the embryo, until the cord and the vessels

are formed, and until the ovule is accurately connected with the inner surface of the uterus.

“From the moment of fecundation until the ovule is attached to the uterus, the product of human conception is almost entirely like the egg of birds. Free, and independent, like it, of every part of the mother, it must convey with it materials for its support, in the same manner as the chick, inclosed in its shell, requires some substance to serve for its evolution. In the one case, it is true, this arrangement is only temporary, whilst in the other it continues during the whole period of incubation; this difference being owing to the circumstance, that, in the former, incubation takes place in the interior of living organs, organs which can furnish abundant nourishment to the *young plant*; whilst in the second, every thing occurs in the atmosphere, without the parts of the adult animal.” p. 45.

The *allantoid vesicle* or *allantois* has been admitted, and denied to be a part of the appendages of the human foetus, from the earliest periods until the present day. It is situated between the chorion and amnion, and communicates with the urinary bladder, by a canal, called the *urachus*. It has been observed in the dog, sheep, cow, the saurian and ophidian reptiles, birds, &c. It is formed at a very early period; rapidly acquires a considerable capacity; and contains a matter, which is not the same at all periods of gestation, or in all animals.

The description of M. Velpéau by no means satisfies us, that such a vesicle exists in the human subject. He was never able to detect any communication with the urinary bladder, and he is compelled to have recourse to analogy to admit that any such channel has, in reality, existed.

From all his facts, which are sufficiently meagre—

“He *thinks himself authorized* to say, that from the fifth week after conception, till the end of pregnancy, the chorion and the amnion are separated by a transparent, colourless, or slightly greenish-yellow layer. This layer, instead of being a simple serosity, is lamellated after the manner of the vitreous humour of the eye. It diminishes in thickness in a ratio with the development of the other membranes. The quantity of fluid, which its meshes inclose, is, on the contrary, in an inverse ratio with the progress of gestation. Becoming gradually thinner, it is ultimately formed into a homogeneous and pulpy layer, by transforming itself into a simple, gelatinous, or mucous layer, which wholly disappears in many females before the period of accouchement. Several of its lamellæ are glued to the outer surface of the amnion, principally at the root of the umbilical cord.” p. 53.

Between this *reticulated body*, as M. Velpéau terms it, (*corps reticulé*,) and the allantoid of oviparous animals, he thinks there is the greatest analogy. Yet the fluid of this body is very different

from the urine, supposed by some to exist in the allantois of animals. His idea is, that it is conservient, like that of the umbilical vesicle, to the nutrition of the foetus at an early period. The inner surface of the lamellæ, which he examined, was covered by an adherent layer of the cream-like matter contained in its interior, and when examined by the microscope, its parietes had a villous appearance, so that he conceives it to be probable, that the substance of the "*corps reticulé*" is secreted by its own parietes.

"I may further remark," he adds, "that this matter preserves its cream-like, flocculent appearance; its resemblance to an emulsive oil; its characters of a nutritive substance, until the ovule becomes fixed to the uterus, and afterwards rapidly disappears to make way for the albuminous layer, which has to continue until the last stage of pregnancy. In short, since every thing adds to the belief, that the cribriform or reticulated body is analogous, in the human subject, to the allantoid of other vertebrated animals, and as, in the ophidian reptiles, birds, and the mammalia, the matter inclosed by that pouch, is far from resembling urine, we may, I think, affirm, that there is an allantoid in the human ovum."

After all, our ideas regarding this vesicle in man—if it exist at all—are far from being determinate; and this remark applies still more forcibly to the *erythroid vesicle*, described by Dr. Pockels of Brunswick, which is not usually admitted by the obstetrical anatomist. Velpeau asserts, that he has never been able to meet with it.

The last chapter of this section of M. Velpeau's work concerns the *organs of circulation* of the foetus, regarding some of which, much interesting speculation of an anatomical and physiological character has been indulged in of late.

With regard to the umbilical cord, he asserts, that anatomists are incorrect in stating that the cord does not begin to be formed until after the first month of gestation. The youngest embryo he had an opportunity of dissecting had a cord. At a fortnight and three weeks old, the dimension is three or four lines; and he thinks his examinations lead him to infer, that at every period of foetal development, the length of the cord is *nearly* equal to that of the body, "if it does not exceed it a little." Prior to the third month, it is irregular, owing to numerous enlargements; but in this month, owing to the absence of these, its bulk becomes much diminished. After this period, it increases in a ratio with the other parts of the foetus, until the full period of gestation.

Its composition is by no means the same at every period of its evolution. At first, it seems to be nothing more than a small, solid cylinder, to which the amnion does not yet furnish a sheath. After the fifth week, it contains, besides the duct of the umbilical vessel,

the omphalo-mesenteric vessels, and a portion of the urachus, or of the allantoid, and of the intestines. At about two months, the digestive canal enters into the abdomen. The urachus, the vitelline canal, and the vessels become obliterated, so that at three months, as at nine, the umbilical stalk or cord is formed only of two arteries, and a vein of the same name, of the jelly of the cord, or of WHARTON, or the spongy tissue of ROUHAULT, and the membranous sheath, furnished by the amnion and chorion. WRISBERG, SCHREGER, and MICHAELIS have admitted lymphatic vessels in the cord; CHAUSSIER, DURR, RIECK, and others, nerves proceeding from the solar plexus; but M. Velpéau thinks it probable, that these authors were misled by some remains of the urachus, of the omphalo-mesenteric vessels, and of the vitelline canal, &c.; at least, he affirms, he has never been able to verify their assertions, notwithstanding all his care has been directed to the examination, and in this he is confirmed by LOBSTEIN and MECKEL. Here again we have to deplore the *inexactness* of that which ought to be *exact*; and the mind is necessarily compelled to remain in doubt, unless it will pin its faith to the sleeve of one observer rather than another, which is too frequently the case amongst both students and teachers. Instead of waiting for the results of fresh experiments, the *verba magistri* are too potent for them to resist; and as in other cases, in place of searching after truth, they become abettors and partisans, and further inquiry is looked upon as idle.

We have already remarked, that according to the views entertained by M. Velpéau, of the decidua, and the decidua reflexa, no part of this membrane can exist between the placenta and the uterus. The foetal surface is enveloped by the amnion and chorion, and a "simple pellicle" covers the maternal surface, and unites its different reliefs. Whilst it is attached to the uterus, this surface is regular, and exhibits neither grooves nor orifices of sinuses; but when the placenta is extruded from the womb, its surface is extremely unequal. Lobes of various sizes are perceptible, separated by grooves of greater or less depth; and these appearances are owing, he says, to the uterus rolling the placenta upon itself, to detach and expel it, and thus tearing the thin and "*anorganic*" pellicle that concealed the intervals between its numerous cotyledons.

It is well known, that until of late almost every obstetrical anatomist adopted the division of the placenta into two parts, constituting, as it were, two distinct placentæ—the one *maternal*, the other *foetal*. MESSRS. LEE and RADFORD have, however, contested this point, and have affirmed, with M. Velpéau, that the human placenta is entirely

foetal. The very fact, indeed, of the existence of a membrane, or as our author calls it, a *membranule*, between the placenta and the uterus, destroys the idea of any adhesion between the placenta and uterus.

Of the arrangement of this membrane we will allow M. Velpeau to speak for himself.

“This membranule, which covers the fungous surface of the placenta, admitted by Arantius, Littre, Hunter, Lobstein, Chaussier, Meckel, and almost every modern anatomist, but rejected by Ruysch, Mery, Rouhault, &c. it seems to me has been generally, but imperfectly understood.

“Some have thought, contrary to the opinion of Wrisberg, that it is only a very thin portion of the decidua. Many vessels furrow it according to the majority of observers. Others think that it passes from one lobe of the placenta to another, without penetrating into the intervals. A yet greater number pretend, on the contrary, that it dips at the same time between the cotyledons, between each fasciculus, and each vascular filaments. Lastly, there are those who believe in its existence during the whole course of gestation, whilst many others affirm, that they have only met with it in the last three or four months.

“Whilst the placenta does not yet form a compact mass, there is no vestige of the layer in question. After the tomentous groupes of the chorion are wholly agglomerated, it appears, on the contrary, to veil, as it were, their summits, and it is soon seen continuous, and confounded with the circle of reünion of the double reflexion of the anhistous membrane. It certainly does not contain vessels; and the idea of a circular venous sinus, which, on the assertion of certain anatomists, exists at the circumference of the placenta, can only be the fruit of inattentive observation.

“The utero-placental *feuillet* is arranged in this respect, like the arachnoid of the brain. On a level with the projecting portions, its adhesion is close, whilst opposite the interlobar anfractuositities, it may be always detached under the form of a delicate and transparent lamella. Like the arachnoid, too, it remains at the surface, and does not generally penetrate into the parenchyma. Its nature is similar to that of the pellicles, which envelope almost all fibrinous concretions, immediately after their formation. It is not a tissue. Placed in water, it is destroyed, dissolved, in a few days, with the same facility as every other membraniform concretion.

“A layer of deposit, (*couche de dépôt*,) much thicker, more fragile, and less regular than the preceding, surrounds all the vascular trunks. This has given rise to the belief, that the vessels of the placenta ramify even in the substance of the decidua; that the chorion is composed of several layers; that the anhistous membrane sends a layer over the external surface, and another over the foetal surface of the placenta, and that the minute pellicle of the latter is folded between every fibril of its lobes and lobules. The lamellæ, of which it is composed, appear to me to be the product of a particular exudation of the womb, of the chorion, and its tomentous fasciæ. In this respect they bear some analogy to the decidua, from which, however, they differ in this, that they are not evident until a long time after the arrival of the ovum in the uterus, whilst the anhistous ampulla forms immediately after fecundation; and one enjoys great

suppleness, and a certain degree of elasticity, whilst the others are dry, hard, and break almost as readily as glass.

“Perhaps, however, there is here rather a dispute of words, than a difference of sentiment as regards things. The uterine exudation, which gives birth to the decidua, does not seem to me to be able to be produced as well by the outer surface of the ovule or its villousities, as by the interior of the Fallopian tube. Extra-uterine pregnancies afford proof of this. The anhistous layer, which at that time surrounds the product of conception, has not certainly proceeded from a mucous membrane. Now this layer, which only differs from the decidua by its less cohesion, is almost wholly like that found on the placenta, on the placental portion of the chorion, and which agglutinates all the fibrils of the vascular parenchyma. With such an arrangement we may conceive, that the placenta appears to be continuous with the decidua, and even covered by it; that its outer pellicle has been described by M. Bojanus under the name of *secondary decidua*, *decidua serotina*, and that all the concretions, which interlard its different parts, admit of being derived from the primitive anhistous membrane, although they are really distinct from it.” p. 66.

Until of late, anatomists have described large vessels passing directly from the uterus to the placenta, and the rupture of these vessels has been presumed to give rise to uterine hæmorrhage. Recently, LEE, RADFORD, and MILLARD, have denied that any such distribution exists. They, however, admit a decidua between the uterus and placenta, and affirm, that small vessels pass between the uterus, decidua, and placenta. M. Velpeau, we have seen, does not allow the existence of a decidua, but admits an interposed pellicle. He denies, however, that any utero-placental vessels exist in the generality of cases.

The common mode in which the placenta is developed, is supposed to be as follows:—When the ovule has descended into the uterus, the villi of its outer surface are elevated, and traverse the decidua, to become attached to the uterus, and in this way the placenta results. These villi, which are at first distributed regularly over the whole surface of the ovule, soon group and collect at one part, whilst at every other, the ovule becomes smoother and transparent. The placenta, however, is not distinguishable until the end of the second month, at which time it covers two-thirds, or at the least half the ovum, and its relative width becomes less, in proportion as the pregnancy is more advanced.

The explanation of Velpeau, founded upon his views regarding the decidua, and decidua reflexa, is different. He affirms, that after the villous ovum has glided between the uterus and the decidua, and become fixed to the organ, which has to contain it during the whole period of gestation, it remains in contact with it by one-half, whilst the other depresses the anhistous membrane, (decidua,) A disk of

the ovule necessarily exists, which is not separated from the uterus by any membrane, and there the placenta becomes developed. He thinks, moreover, that the placenta commences, in some measure, with the arrival of the ovule in the uterus, and that its dimensions, compared with that of the ovum, are nearly the same from the commencement to the end of its development.

One part of this explanation appears to us to account most satisfactorily for the fact of the placenta being formed so frequently near the cornua of the uterus, instead of over the os uteri as it would appear it ought to be, if the ovule fell from the Fallopian tubes into the cavity of the decidua, according to ordinary belief. The statistics of obstetrics, adduced by M. Velpeau, further confirm his view. Of thirty-four females, who died in a state of pregnancy, or recently delivered, at the *Hôpital de Perfectionnement*, an examination of the parts exhibited that in twenty the centre of the placenta corresponded to the orifice of the Fallopian tube; in three it was anterior to it; in two posterior; in three beneath, and in six near the fundus of the uterus.

The mode in which the placenta is attached to the uterus, has been an interesting question with physiologists, and it has been revived of late by Messrs. Lee, Radford, &c. and by our author. The common opinion has been, that the large venous canals of the uterus are uninterruptedly continuous with those of the placenta. WHARTON and REUS, and a number of others conceive, that at an early period of pregnancy the part of the uterus in contact with the ovum becomes fungous or spongy, and that these *fungosities*, which constitute the uterine placenta, commingle and unite with those of the chorion so intimately, that laceration necessarily occurs when the placenta is extended, and DUBOIS goes so far as to consider the milk fever as a true traumatic disease, produced by such rupture! but it would be a waste of space to dwell on the different idle speculations that have been indulged on the subject.

The opinion of M. Velpeau, and of Messrs. Lee, Radford, &c. is, that the maternal vessels do not terminate in the placenta; but that apertures—portions scooped out, as it were, exist in their parietes, which are closed up, according to the latter gentlemen, by the decidua;—according to M. Velpeau, by the membranule or anorganic pellicle, which, as we have seen, he considers to cover the uterine surface of the placenta, or by some valvular arrangement, the nature of which has yet to be discovered; but these apertures have no connexion, in his opinion, with any vascular orifice, either in the decidua or placenta. Under these views, if uterine hæmorrhage should

take place, owing to a separation of the placenta, it would probably be, because the plug to the apertures in the sides of the maternal vessels had been thus removed.

The mode in which these authors consider the placenta to be attached to the uterus is, so far as it goes, somewhat unfavourable to the idea generally entertained, that the maternal vessels pour their blood into the maternal side of the placenta, whence it is taken up by the radicles of the umbilical vein. Whatever blood is exhaled must necessarily pass through the decidua, according to Lee and Radford, or through the pellicle, according to Velpeau. The last individual thinks, that no blood, in the state in which it is in the maternal vessels, proceeds directly to the placenta, but that it experiences first of all some elaboration, and the reasons he assigns for this belief are the following:—

“If we were to persist to consider that the fœtus receives blood ready formed from the mother, all we could affirm would be, that this fluid enters the placenta by simple porosities, by a sort of imbibition, which might be explained by a simple continuity of surface. To this I could have no objection to offer, if the blood did not appear to pass at no time in its ordinary state to the ovum. It certainly does not, in the earliest periods at least, for the shaggy chorion does not contain vessels until a later period, and the filaments are never hollow as far as their extremities. On the other hand, the experiments of Autenrieth and my own show, that the blood of the fœtus has not the appearance of that of the mother. It is at first rose-coloured, then it becomes more red, then blackish, and presents no difference of colour in veins or arteries. M. Tiedemann and others have noticed, that it contains a much greater proportion of serum than in the adult, and it is less coagulable. Every thing, in short, proves that its chemical composition is very unlike that of the blood of the mother. Even if chemistry had not exhibited these differences, we should have been compelled to believe that this fluid, like food, requires to be adapted to every age—fœtal or extra-uterine, and that the blood of an adult female would be in some measure a poison for so frail a being as the embryo, or the fœtus. If it were useful to insist on this point, I might add, that according to the microscopical experiments of MM. Prévost and Dumas, the globules of the blood are so small in the fœtus, that it would not be possible for those of the adult to traverse the same canals, and the same orifices, without disturbing the equilibrium of the functions, and immediately producing death. If, therefore, the blood is poured into the cells of the placenta, or pumped up by the porosities of that organ, it must at least undergo an elaboration, an important modification, before entering the umbilical vein. But what is the nature of this modification? I know not.” p. 74.

This leads us to glance at the deeply interesting subject of fœtal nutrition, respecting which there is such difference of sentiment, as to exhibit clearly, that much respecting it is yet uncertain; whilst many points have a sort of traditionary authority, that prevents them from

being sifted and examined in the manner they ought, but regarding many of which, it seems to us, a well-founded scepticism may be indulged.

One of the least tenable hypotheses that have been entertained regarding the embryo at its first formation is, that for the first month—and why the period is limited to this is not apparent, the vitality of the foetus is not independent, but is a part, as it were, an offset of that of the mother; that it has no separate powers of existence; no faculty of self-evolution; and that its organs are nourished by the plastic materials, which it incessantly derives from the maternal blood.

It appears to us manifest, that from the very moment of the union of the materials furnished by both sexes at a fecundating copulation, the elements of the new being must exist, and it must possess within itself the faculty of self-evolution; otherwise, how can we understand the phenomena that take place on the ovarium after fecundation. It is admitted, that this last organ furnishes the unfecundated ovum, and that the sperm must come in contact with this ovum; after which, fecundation is accomplished, and immediately the ovum undergoes a further development, escapes from the viscus in which it was formed, is laid hold of by the Fallopian tube, passes through this canal, and is deposited in the interior of the uterus, with which it ultimately contracts adhesions.

But all this requires time. The ovum does not probably reach the uterus, in the human female, until after the expiration of a week—more or less—and some time must elapse before such adhesions are effected, and consequently before any thing like maternal blood, whence the plastic materials are derived, according to the view in question, could be sent to it. During the whole of this time, the embryo doubtless derives its nourishment from the albuminous matters with which it is surrounded in the ovum itself, in the same manner as the egg of the oviparous animal obtains the nutriment, necessary for its full development during incubation, from the matters surrounding it; in which case the supply of fresh plastic materials, derived from the maternal blood, is obviously impossible. But some time after it has attained the interior of the uterus, it is compelled to absorb appropriate nutriment from the mother; the minute quantity existing in the ovum, at this early period being totally insufficient for the development which the foetus is destined to attain. In this respect, the human ovum differs from that of oviparous birds, which are hatched out of the body;—the latter containing nutriment enough for full foetal evolution.

Since the time of HIPPOCRATES, ARISTOTLE and GALEN, different anatomists and physiologists have asserted, that the umbilical vein is the *only channel* through which nutriment reaches the foetus; or, in other words, that the whole of the nourishment which the foetus receives is from the placenta, but the facts, to which allusion has already been made, are sufficient to overturn this hypothesis. It is impossible, that the placenta can have any agency before it is in existence. The umbilical vein cannot transmit fluids until it is *in esse*. Such an explanation of the process of nutrition could only hold good after the first periods, and then, as we shall see, it is sufficiently doubtful. Accordingly, we find that some of the most distinguished of modern physiologists, who have devoted their attention to embryology, have completely given up the notion of any placental agency during the first months, and they who have invoked it at all have usually done so as regards the after periods only.

On all this subject, however, we have the greatest diversity of views. Lobstein, for example, affirms, that the venous radicles of the rudimental placenta obtain nutritive fluids from the mother during the first days only, until the period when the arteries are formed; but after this all circulation between the uterus and placenta ceases, and the umbilical vesicle, the liquor amnii, and the jelly of the cord are the sole organs of nutrition. Meckel thinks the placenta is *never* the source of nutritive materials. He regards it—properly we think—as an organ for the revivification of the blood of the foetus, analogous to the organ of respiration in the adult; whilst nutrition is, in his opinion, accomplished by the matter of the umbilical vesicle in the beginning, by the liquor amnii until mid-term, and by the jelly of the cord until the end. According to BECLARD, nutrition is effected during the first weeks by the fluid of the umbilical vesicle; afterwards, by the liquor amnii, and the jelly of the cord; and, as soon as the ovum becomes villous, and developes the placenta, by that organ.

ADELON, again, is of opinion, that two sources of nutrition ought alone to be admitted;—the umbilical vesicle, which is the sole agent for nearly two months; and the placenta for the remainder of the period. Lastly, M. Velpéau, in the work before us, equally thinks, that the nutriment of the ovum is derived from different sources at different periods of gestation.

“It, (the embryo,) is at first but a vegetable, imbibing the surrounding humours. The villi of its circumference—true cellular *spongioles*—obtain nutritive principles in the tube and uterus, to maintain the development of the vesicles of the embryo; after which the embryo is nourished like the chick in ovo, or rather, like the plantule, which is at first altogether developed at the ex-

pense of principles inclosed in its cotyledons. It gradually exhausts the vitelline substance contained in the umbilical vesicle. The emulsive substance of the reticulated sac or of the allantoid pouch is also gradually absorbed. The end of the second month arrives. The vessels of the cord are formed. The placenta is unfolded, and is soon sufficient to keep up the evolution of the fœtus. By its contact with the organ of gestation, the spongy cake obtains from the uterus reparatory materials; works them up; and forms from them a fluid, more or less analogous to blood, and this fluid is absorbed by the radicles of the umbilical vein. In a word, the ovule, or the placenta obtains materials from the uterus for the formation of the fluids of the fœtus, as the liver, the kidney, the seminal gland, &c. obtain from their own vessels materials for the formation of bile, urine and the prolific liquor; and as trees and plants extract from the soil the principles of the numerous compounds they contain. I see nothing difficult of comprehension in all these acts. Moreover, the villousities of the chorion, which, to make use of an expression of M. Seiler, are at first but *suckers*, possessing a fungiform character from their extremity to the end, constitute an instrument of absorption for the whole period of fœtal life, and would of themselves suffice to overturn all the hypotheses, based on the pretended vascular continuity of the uterus with the placenta." p. 74.

We find, consequently, some of the most distinguished physiologists of the age denying—as it would seem that every one ought to deny—that the nutrition of the fœtus takes place solely by means of the blood sent by the mother to the fœtus. If we search into the evidence afforded us by transcendental anatomy, we find, that amidst the various singular monstrosities met with, there would appear to be but one thing absolutely necessary for fœtal development—an absorbing surface surrounded by a nutritive substance that can be absorbed. Head, heart—every thing, in short, except organic nervous system, vessels, and cellular tissue—may be wanting, and yet the fœtus will grow so as to attain its ordinary dimensions.

We have the most incontestable evidence, that a fœtus may be born alive, without umbilicus, umbilical cord, or any evidence of vascular connexion between it and the mother. In noticing the varieties met with in the umbilical cord, M. Velpeau refers to many such cases. THOMAS BARTHOLIN, during his travels in Italy, saw an individual, forty years old, who was born without anus, penis, or umbilicus; and M. Velpeau cites cases from RUYSCH, SAMSON, CHATTON, ROMMEL, DENYS, FATIO, V. GEUNS, SUE, PENCHIENATI, FRANZIO, DESGRANGES, KLUYSKENS, PINEL, MASON, OSIANDER, DIETRICH, FRORIEP, and VOISIN, but as these cases militate against his views of embryotrophy, he attempts to diminish their force by affirming—

“That the observations which he has made, satisfy him, that all the fœtuses thus born had died in utero, in consequence of the destruction of the cord, or the closure of the umbilicus; or else that the umbilicus existed, but was hidden

or lost in the extroversion of the bladder, almost always remarked in those that had lived."

Passing by the strange deduction of M. Velpéau,—that his "observations" have satisfied him of the incorrectness of observations made by men, who have long since passed away,—long before he existed,—as well as the facts, that certain of the animal kingdom breed their young without placenta or umbilical cord, and that the foetus, in extra-uterine pregnancies, has frequently no placenta,—the case given by HOFFMANN, and cited by Dr. JOHN MASON GOOD, of a foetus born in full health and vigour, with the funis sphacelated, and divided into two parts,—and a case observed by Dr. Good himself, appear to us to be impregnable. The case in question occurred to Dr. Good in 1791. The labour was natural; the child, scarcely less than the ordinary size, was born alive; cried feebly, once or twice after birth, and died in about ten minutes. The organization, both internal and external, was imperfect in many parts. There was no sexual character whatever;—neither penis nor pudendum, nor any interior organ of generation. There was no anus or rectum; no funis; no umbilicus. The minutest investigation could not discover the least trace of any.

With the use of a little force, a small, shrivelled placenta, or rather the rudiment of a placenta, followed soon after the birth of the child, without a funis, or umbilical vessels of any kind, or any other appendage by which it appeared to have been attached to the child. In a quarter of an hour afterwards, a second living child was protruded into the vagina, and delivered with ease, being a perfect boy, attached to its placenta by a proper funis. The body of the first child was dissected in the presence of Dr. DRAKE, of Hadleigh, and of Mr. ANDERSON, of Sunbury, to both of whom Dr. Good appeals for the correctness of his statement.

Transcendental anatomy, then, instructs us, that placenta and umbilical cord are not *indispensable* to foetal nutrition; and compels us to infer, with Meckel, one of the most eminent teachers of anatomy and physiology—in all their bearings—of modern times, that the human placenta may have no direct agency in embryotrophy. We are necessarily therefore driven to the conclusion, before laid down—that in order that a foetus shall be produced in utero it is but necessary, that there shall be an absorbing surface surrounded by a nutritive substance that will admit of being absorbed. Now, the cutaneous envelope of the foetus—monstrous or natural—is such a surface, and the liquor amnii such a fluid; whilst the matter of the umbilical vesicle, and the jelly of the cord, when these parts exist, and *possibly* some material derived through the placenta—after it exists—may lend their

aid. But the participation of the last organ is—to say the least—doubtful. Its function is probably to admit of the foetal blood being *shown* to that circulating in the maternal vessels, so that some change may be effected in the former, which may better adapt it for serving as the pabulum, whence the secretions, from which the foetal organs have to be elaborated, must be formed. We cannot, however, pursue this deeply interesting subject further.

The second and last section of the work comprises two chapters—the one on the *formation of the embryo*, the other on *the successive development of its different parts*. In neither do we find much on which to comment.

The appearance of the embryo, when it can be first detected, is of course a matter of observation, yet the evidence of different observers is most discordant. M. Velpeau does not attempt to say what is its primitive form, but his observations have satisfied him, that the spine is the fundamental part of the body; that it appears before any other organ; that it exists alone for an appreciable time; that its shape is not essentially different from what it is at other periods of intra-uterine life; that at twenty days and some days afterwards, it is not straight, nor is it larger in the middle; that the head and the neck form at least one-half its length; that its curvature is the nearer to a circle the less its development; and that the appearance of its circumference differs but little from what it presents afterwards—

“Whilst its anterior *contour* or its concavity merits the most serious attention by the changes which it experiences; on it the different organs being successively developed.” p. 78.

In the desire for generalization, which has possessed the minds of many of the modern anatomists and physiologists—of Germany and France more especially—it has been attempted to show, that every human foetus, at its earliest periods of development, is alike as regards its sexual organs, and that it has ultimately the characteristics of one or the other sex, according to circumstances often perhaps adventitious. This view has been suggested by the impracticability of distinguishing the sex, until a certain degree of development has been attained. For example, at the end of the fifth week, a small, cleft eminence is apparent, which is the rudiment of the scrotum or the vulva, according to the sex. At the sixth, a small black point is perceptible in front of the coccyx, which marks the anus, or the aperture common to the anus and genital organs. A little nearer the umbilicus, a conical tubercle is perceptible, connected at its inferior part. This forms the rudiment of clitoris or penis, according to the sex. About the seventh or eighth week, this tubercle appears to be surmounted

by a glans. At the eleventh or twelfth the perinæum forms, so as to separate the anus from the genital organs. At the fourteenth the sex is marked.

This striking similarity between the male and female organs has led M. TIEDEMANN to conclude:—that the female sex is the male, arrested at an inferior point of organization. According to him, every embryo is primitively female;—the cleft, above-mentioned, being the vulva; and the projecting tubercle the clitoris. To constitute the male sex, the cleft of the vulva is united to form a raphe; the labia majora when joined, form the scrotum; the nymphæ, the urethra; and the clitoris is converted into a penis. In support of this opinion, M. Tiedemann affirms, that the lowest species of animals are almost all females, and that all the young acephali and abortions, which he has examined, were so likewise.

On the other hand, ACKERMANN and AUTENRIETH assert, that the sexes are originally neuter; whilst M. Velpéau is disposed to believe, that they are all male! the infra-pubic prolongation existing in every embryo, although there may be neither labia majora, nor scrotum. p. 82.

But granting with any of these speculatists, that the embryo belongs to either one or the other sex, or is neutral, we must still remain at a loss regarding the influences that occasion the subsequent mutations; and it seems impossible not to admit, that, although an apparent sexual identity may exist amongst different embryos, there must be an impulse, seated somewhere, which gives occasion to the sex being ultimately male or female, as it causes the young being to resemble one or other parent in its outward form, or internal configuration; and, if our means of observation were adequate to the purpose, a distribution of arteries or nerves might probably be detected, which would satisfactorily account, *ab initio*, for the resulting sex. In the absence of such positive data, M. GEOFFROY ST. HILAIRE has suggested that the difference may be owing to the distribution of the two branches of the spermatic artery. If these branches remain in approximation, and proceed in concert—the one to the testicle, the other to the epididymis—the individual is male; if, on the contrary, they separate—the one going to the ovary, the other to the corresponding cornu of the uterus, the individual is female. The degree of predominance of the cerebro-spinal system occasions the approximation or separation of these two arterial branches. This predominance being stronger in the male, the spermatic arteries are more feeble, and consequently in greater proximity; and *vice versa*. But all this, it need scarcely be said, is pure hypothesis.

Since writing the above, we have received Dr. GRANVILLE's splendid "Graphic Illustrations of Abortion, and the Diseases of Menstruation," the text of which bears almost wholly on the subject of embryology; the plates being mainly intended to elucidate a forthcoming publication by the same author. We can, therefore, at no time bring it before the attention of the profession better than at present.

Conception Dr. Granville properly considers to be accomplished in the ovarium. The evidence in favour of this view of the subject is indeed overwhelming; yet we have such eminent physiologists as MECKEL, and PREVOST and DUMAS doubting it. The ovulum, when it descends into the uterus—Dr. Granville asserts, on the authority of Professor BOER, of Königsberg—has an external membrane enveloping it, which Boer calls the "cortical membrane," and the author "*cortex ovi*." This membrane they describe as the one which, we have seen, is usually regarded as a uterine production, and denominated the *decidua reflexa*—the reflected caducous or deciduous membrane.

He consequently denies that there is any such thing as a decidua reflexa—an opinion which has been embraced, but upon other grounds, by many obstetrical inquirers, and amongst others, by Professor DEWEES, to whom we are pleased to see Dr. Granville offer the merited tribute, of being "as skilful and clear-sighted an obstetrical writer of the United States of America, as any that have appeared in Europe." p. v.

In two of the specimens of abortion, which are figured in the present work, there are strong evidences of the existence of this *cortex ovi*, which envelopes the shaggy chorion. This cortical membrane is destined to be absorbed during the first months of utero-gestation, so as to expose the next membrane to the contact of the decidua, with which a connexion takes place in the part where the placenta is to be formed.

"In that part, however, the cortex ovi is never altogether obliterated, but only made thinner; and in process of time it is converted into a mere pellicle or envelope, which not only serves to divide the filiform vessels of the chorion into groups or cotyledons in order to form the placenta, but also covers all over those cotyledons or groups of vessels. I have called this the *membrana propria*." p. iv.

Dr. Granville thinks it probable, that the decidua consists of two laminae, "inasmuch as we always find it with one surface perfectly smooth, and the other rough."

The ovulum, on entering the womb, is about the size of a small

pea. The time at which it emerges from the Fallopian tube is not determined.

“It is said to have been detected in the uterine cavity on the eighth day, (Home.) Although it has lately been the fashion to doubt the accuracy of such a fact, there is reason to believe it to be correct, from the circumstance of M. Bauer’s microscopic examination of the ovulum, and description of its structure corresponding with more recent discoveries, (Boer.)” p. vii.

After the ovulum is lodged within the cavity of the womb, it continues to grow on its own “life-principle,” until its connexion with the mother is effected, through the medium of the deciduous membrane, which becomes, at a more advanced period, as it were, a new and additional covering to the ovulum. The growth of the ovulum causes the *cortex* to burst, as happens with the receptacle or cortex of certain seeds, and with the outer shell of the ova of some oviparous animals.

On the cortex bursting, the fibrils of the chorion entwine themselves with the flocculi of the decidua, and thus the ovulum fastens itself to the uterus by one or more contiguous points. These fibrils are not all vessels. Some are only suckers; others are real vessels.

“The existence of any vessels among the fibrils of the chorion has been denied very recently upon the same ground, namely, microscopical observations. (Breschet and Raspail.) But there must be an evident mistake in such observations: for the actual progress of those filiform vessels, and their gradual swelling into large veins and arteries, at an advanced period of fœtation, have been noticed in examining various human ova of different ages. (Lobstein, Velpeau, Dutrochet, and myself.)”

The chorion he affirms to be bifoliated, and he thinks, with Dutrochet, it is probably even trifoliated. Its vascularity is proved by its diseases, chiefly of an inflammatory character, ending in thickening of its texture, of which he gives several examples with graphic illustrations; and he affirms, that there is a preparation in the collection of Sir CHARLES CLARKE, which shows the vessels of the chorion as evidently as if they had been injected.

In like manner, although normal anatomy may have failed in showing the amnion to be vascular, pathological anatomy, he asserts, has succeeded, and has shown that it may be a secreting membrane.

The amnion he considers to be a sac formed by the reflected layer of the epidermis of the embryo, and he quotes Velpeau and others in support of the opinion; but Velpeau, we have seen, although he once thought so, now disclaims the notion.

On the mooted question, whether the arteries or nerves appear

first, Dr. Granville accords with those who give precedence to the vascular system. "The nerves invariably appear after the arteries which they are intended to accompany." Yet the experiments of Home, and of Prevost and Dumas, lead to reverse conclusions. The same dissidence exists with regard to the precedence in formation of the blood-vessels. The blood is formed independently of the heart; the veins, according to the generality of physiologists, first appear; next the heart, and then the arteries. A distinguished Italian physiologist, however, (ROLANDO,) assigns the precedency to the arteries. Further experiments are demanded to settle these interesting, but intricate points of organogenia.

Of the umbilical, allantoid, and erythroid vesicles, he gives us nothing new, and nothing from personal observation.

On the interesting subject of utero-fœtal circulation, Dr. Granville is enthusiastically in favour of a utero-decidual circulation. He thinks the fact of the existence of vessels passing between the uterus and decidua unquestionable; but these he makes independent of the fœto-placental circulation. His view of the functions of the placenta are precisely those which we have given in the former part of this review.

"90. The circulation of the blood in the ovum is independent of that of the mother, (personal experiment (59) and all the more recent physiologists.) The embryo creates its own blood, and through it sustains its own existence. But its blood, like that of all other animals, whether during its intra or extra-uterine life, requires to undergo certain changes at every minute period of that life, and those changes it experiences through the influence of the blood of the mother. (Magendie, Mende, Pockels, Baer, Chaussier.)

"91. The function of the placenta, therefore, seems to be to facilitate, and in good truth to effect the necessary changes in question, (90.) The decidual vessels receive the arterial blood of the mother. This is spread over a very considerable surface of tubular structure, which being in its distribution, made to come in apposition with the infinite ramifications of the umbilical placental vessels at innumerable points, (like the inspired air distributed through the bronchial passages, is made to come in apposition with the myriads of vascular rami of the lungs;) the required changes in the blood of the fœtus are produced, just as the changes called for in the pulmonic blood are produced by the peculiar arrangement of that part of the animal economy. When the arterial blood of the mother has produced the desired effect on that of the fœtus, it is returned by decidual veins to the uterine sinuses applied, like absorbing mouths, to the surface of the decidua, when it enters into the general venous system of the mother. (Magendie; personal observations.") p. xviii.

On the subject of the nutrition of the fœtus, Dr. Granville is extremely obscure. He does not indeed know how to decide. The

above extract would show, that he considers the function of the placenta to be that of a mere respiratory apparatus; but he quotes the opinion of Mr. MAYO, that—

“It is not difficult to believe, that nourishment is directly imbibed from the vessels of the mother by the circulating fluid of the embryo, through the fine intervening membranes.”

This, however, could only apply to the ovulum after it has contracted an adhesion with the uterus. He is disposed, too, to consider it probable, with Dr. Hunter, that the foetus may be nourished by thousands of small lymphatic vessels, which absorb nourishment from the blood of the mother, and carry it along the navel-string. He adduces many cogent reasons why the foetus should not be nourished by “a regular deglutition and digestion” of the amnionic fluid, along with others that are not as cogent,—as where he asserts, that the liquor amnii is “mere water with a vestige only of albumen, the only nutritive quality in it.”

The view that ascribes foetal nutrition to cutaneous absorption of the liquor amnii, and which we have attempted to show, is the most tenable of all, and unites the greatest amount of evidence in its favour, is thus cursorily passed over.

“Some have thought that the amnionic fluid was absorbed through the pores of the skin, (Osiander;) others through the mammæ of the foetus, (Oken.) That the vesicula intestinalis, (umbilicalis,) contributes to the growth of the embryo is a great deal more probable, (Blumenbach, Soemmering, Lobstein, Joerg.) It is also not improbable that the gelatine of Wharton contributes to that object, (Lobstein.) But these are all conjectures, for the probability or improbability of which as many arguments and real facts have been alleged on equally unquestionable authority. ‘Ce sujet,’ observes Magendie, ‘a souvent exercé l’imagination des physiologistes, sans aucun profit réel pour la science.’” p. xix.

In this vague manner he leaves this interesting subject. No one can presume to say, from the perusal of his observations, what he considers to be the main agents of embryonic and foetal nutrition.

These are the principal topics touched upon in the *text* of Dr. Granville’s publication, or in what he calls the *Prolegomena*; the remainder of the letter press, constituting what he regards as the main body of the work, being devoted to an explanation of the plates. In this part of the work he has indulged in the extreme affectation of classifying his specimens of abortion, as if they were fixed and invariable products of animated nature. Thus, we have—as specimens of very early miscarriages—“Fig. 1. *Ovulum bigeminum lanuginosum*.” “Fig. 2. *Ovulum semi-lanuginosum*:”—as specimens of mis-

carriages between two and three months—"Fig. 10. *Ovum pyri-forme externe opacum*." "Fig. 12. *Ovum opacum plethoricum*:"—amongst those of miscarriage between the third and fourth month—"Fig. 18. *Ovum coriaceum, cum hydrope funis et placentâ hydaticâ*." "Fig. 19. *Ovum cum placentâ, nec vasculare, nec plenè cotyledonicâ, sed filiforme. Amnion morbosum*." There is, indeed, about the whole work—beautiful and accurate as are its graphic illustrations—a sufficient appearance of the author's self-satisfaction, and occasionally too much evidence of something closely approximating to *Charlatanisme*.

At the end of his prefatory advertisement, he observes—

"I shall conclude by remarking, that the plates are intended to illustrate a work "on Abortion and the Diseases incidental to Menstruation," which I have been preparing for several years, and a prospectus of the contents of which will be found at the end of the present volume. That work will appear, Deo favente, in the course of the present year; but for the convenience of such persons as may not feel inclined to purchase it, the collection of plates has been purposely so arranged, as to be published with a corresponding text, in a separate form, and independently of the forthcoming volume."

R. D.

ART. XIII. *Illustrations of the Elementary Forms of Disease*. By ROBERT CARSWELL, M. D. Professor of Pathological Anatomy in the University of London, &c. London, 1833. Parts 1, 2, 3.

THE labours of the pathological anatomists for the last twenty years have been developing gradually the different forms of lesion to which the various textures of the body are liable, under the influence of morbid action; while the progressive state of physiology and chemistry has contributed largely to a *correct* understanding of their vital and physical characters, and suggested an accurate and judicious system of therapeutics. Aided by the efforts of the immortal BICHAT, the pathologist is now enabled to systematize and prove the identity of lesions, which were formerly regarded as dissimilar in anatomical and chemical characters. Of the recent contributions to pathology, none should claim a greater meed of praise than that of Mr. Carswell, on account of the perspicuity and clearness of its descriptions; the soundness of its views; the beauty of its illustrations, and its simple, yet accurate classification. We shall endeavour, as the work is costly, and consequently must have a limited circulation, to present

our readers with a faithful analysis of the first, second, and third fasciculi, believing that he would prefer making his own strictures upon such views as conflict with the prominent authorities on the morbid degenerations of which they treat. The different opinions advanced by pathologists upon the primary state of tuberculous matter, have induced our author to enlarge his definition of it, so as to embrace many of the apparently adverse observations of equally reputable investigators; believing, as is certainly evident, that this diversity of opinion has, in many instances, arisen from the stage in which the examination has been conducted; thus ANDRAL contends that tubercle at its origin is an opaque, friable, rounded body, of a yellowish-white colour, and without traces of organization or texture; while LAENNEC does not consider this to be the first stage, but that this is in every instance preceded by a grayish, semitransparent granule. On the other hand, CRUVEILHIER infers from his observations, that the hard, granular body is always a consequence of a puriform fluid; and his views are sustained by M. TRÓUSSEAU and LA BLANC in their examinations of the lungs of horses; while Dr. BARON and M. DUPUY suppose that it commences as a transparent vesicle or hydatid. Tuberculous matter, as defined by Mr. C. is a pale yellow or yellowish-gray, opaque, unorganized substance, the form, consistence, and composition of which, vary with the nature of the part in which it is formed, and the period at which it is examined. Considering tubercle as the product of the perspiratory secretion, Andral contends that it may be located in every part of the body, but is most usually found in the cellular tissue. Dr. Carswell, however, contends, that by far the most frequent development of tubercle takes place in the mucous tissue, and that whenever it is found in an organ provided with a mucous membrane, it will have its seat upon that membrane, thus the mucous system of the respiratory, digestive, biliary, urinary, and generative organs is much oftener the situation of tubercle than any other texture which enters into their composition. Our author's experience is directly adverse to that of Andral; for although the latter does not deny that tuberculous matter is sometimes found on the free surface of the mucous membrane, yet he asserts this to be extremely rare, and that he would be led to believe, that in by far the majority of instances, when the mucous membrane is involved, the primary location of the tubercle is in the sub-mucous cellular membrane, and by its gradual increase encroaches upon, and ultimately implicates it.

Tuberculous matter is frequently formed and diffused over the free

or secreting surface of the serous membranes in the cellular texture, and in the blood, and not unfrequently accumulates in the lacteals and lymphatic vessels. The fact of tuberculous matter being absorbed by the lacteals, will be objected to by many physiologists who considered the office of the lacteal vessels to be exclusively the taking up and converting into chyle the nutritive particles of the chymous mass; if, however, the statement of Dr. C. that tuberculous matter is found in the lacteal vessels be correct, we must consider it as an illustration of his foregoing statement, and view it as a production of the lining membrane of the vessel itself. The cerebrum and cerebellum are sometimes the seats of this morbid product.

Admitting that tubercle is developed in almost every texture, it is evident that its form or external configuration must vary according to its location, and thus the rounded form considered by some pathologists as characteristic of this production, is purely accidental, and is ascribable entirely to the physical constitution of the texture in which it is located. Thus, from the homogeneous nature of the brain, and the equal resistance which is opposed to the accumulation of tuberculous matter at every point, it is compelled to assume a rounded form; in the cavity of the air-cells it forms a globular tumour; in the bronchi a tubular or cylindrical form; while in the biliary system it has a racemiform arrangement, from its being contained in the ducts and their dilated bulbous extremities. On the surface of serous membranes it is either globular or lamellated; in the infundibula, pelvis, and ureters of the kidneys, it is moulded into the form of each part, and sometimes it becomes infiltrated, and does not assume a definite form.

We shall refer the reader to the following remarks upon the consistence and colour of tuberculous matter, as they embrace the merits of the controversy between pathologists in relation to what ought to be considered the strict definition of tubercle and its primary state.

“Tuberculous matter does not acquire its maximum of consistence until an indefinite period after its formation. It is frequently found in its primitive state in the bronchi, air-cells, biliary ducts, and their dilated extremities, in the cavity of the uterus and Fallopian tubes, &c. resembling a mixture of soft cheese and water, both in consistence and colour; but when much resistance is offered to its accumulation, as in the lymphatic glands, and even sometimes in the air-cells of a whole lobule, it may feel as firm as liver or pancreas. These extreme degrees of consistence of tuberculous matter depend not only on the resistance which the tissues of these and other parts oppose to its accumulation, but also on the removal of its watery part some time after it has been deposited. Hence it follows, that tuberculous matter may, when first perceived, be either very

soft, or remarkably firm. In the first case it is pultaceous, and feels somewhat granular when rubbed between the fingers; in the second friable; and in both it is of a pale-yellow colour, and opaque.”

“The gray semitransparent substance already alluded to, by no means necessarily precedes the formation of the pale-yellow or opaque tuberculous matter; it is, indeed, observed in a few only of the many organs in which the latter is found. Thus, it is never seen in the cavity of the uterus or Fallopian tubes; in the ureters, pelvis, or infundibula of the kidneys; in the mucous follicles of the intestines; in the lacteals or lymphatics; in the biliary ducts; nor do I recollect to have seen it in the cerebral substance. I have never met with it in the bronchi, unless in some of their most minute or terminal branches. On the contrary, the semitransparent substance is frequently seen in the air-cells, and on the free surface of serous membranes, particularly the peritoneum; and in both it is certainly sometimes observed to precede the formation of opaque, tuberculous matter; because, first, a number of cells of the same lobule are seen filled with the former, whilst the remaining cells contain the latter substance; secondly, because on the peritoneum the gray, semitransparent substance is generally more abundant than the pale-yellow, opaque matter; and thirdly, because a small nucleus of the latter is frequently enclosed in a considerable quantity of the former. The following is the explanation which I would offer of these exceptional conditions to the regular and ordinary formation of the tuberculous matter. But, first of all, it is necessary to remark, that the formation and manifestation of this matter as a morbid product cannot take place unless the fluid from which it is separated—the blood—has been previously modified. This important fact being admitted for the present, it is obvious that a healthy secreting surface may separate from the blood not only the materials of its own peculiar secretion, but also those of tuberculous matter. Such is, indeed, what takes place in the air-cells. The mucous secretion of their lining membrane accumulates where it is formed; but it is not pure mucous, it contains a quantity of tuberculous matter mixed up with it, which after a certain time is separated, and generally appears in the form of a dull, yellow, opaque point, occupying the centre of the gray, semitransparent, and sometimes inspissated mucus. This process of separation of tuberculous matter from secreted fluids is strikingly exemplified in tubercular peritonitis. When we examine the peritoneum thus affected, the three following stages of the process are frequently extremely well-marked; first, on one portion of this membrane there is seen a quantity of recently-secreted, coagulable lymph; secondly, on another we find the same plastic semitransparent substance, partly organized, and including within it, or surrounding a globular mass of tuberculous matter; and lastly, on another part the coagulable lymph is found converted into a vascular or pale cellular tissue, covered by an accidental serous membrane, beneath which, and external to the peritoneal or original secreting surface, the tuberculous matter is seated, having the form of a round, granular eminence, resembling in colour and consistence pale, firm cheese.”

“In this, as well as in the preceding case, we cannot but perceive that the formation of tuberculous matter originates in a process similar to that of secretion; that its separation from the blood may be accompanied with that of natu-

ral, and also other morbid secretions; and hence the reason why its physical characters are sometimes observed, particularly in the first stage of its formation."

We discover by the above remarks, that our author does not conceive firmness to be an essential attribute of tuberculous matter, and that even when it does exist in this form, it is not unfrequently after some considerable time, and owes its consistence to the removal of the fluid part of the original deposit. Neither does he believe with Laennec, that in every instance the primary stage is the gray, semi-transparent granule. To explain the deposit of this morbid production, a heavy draught is made upon the humoral pathology, for while the blood is presumed to be modified in its qualities, the secernent apparatus is in a healthy condition, performing its usual function, elaborating from the blood, besides its healthy secretion, a fluid, which, when deposited, proves to be the morbid production in question. As repugnant as this appears to be to the almost universally prevailing doctrine of solidism, yet we cannot but admit, that it explains satisfactorily the deposition of this matter in textures essentially different in vital, chemical, and physical attributes, and the several stages through which it passes in its gradual development.

When anatomically and chemically examined this matter presents variety in its composition. In the cheese-like substance alluded to above, there is not the slightest trace of organization, and it may be said of tuberculous matter in general, that—

"It has, in fact, no definite internal arrangement, and the changes of bulk, consistence and colour which it undergoes, are entirely dependent on the influence of external agents."

Tested by chemical agents it presents different results in the different stages of its deposit and even in different organs. In man it is principally composed of albumen, with various proportions of gelatine and fibrine, with a portion of the earthy salts, principally phosphate of lime; but the most important fact connected with the chemical composition of tubercle is, that either from the nature of its constituent parts, the mode in which they are combined, or the condition in which they are placed, they are not susceptible of organization, and consequently give rise to a morbid compound, capable of undergoing no change that is not induced in it by the influence of external agents. Thus, when softening of a tubercle takes place it cannot be accomplished by any change which is effected in the morbid product itself: from this it would appear that the opinion of Laennec, that the softening commences in the centre of the mass, is somewhat

doubtful; in this Andral unites, for in examining the mode by which ripening is accomplished he distinctly disavows any agency of the tuberculous product itself. In consequence of the texture in which it is located, the deposit not unfrequently remains fluid from its origin, but when it becomes firm the process of softening is attributable to each particle of the tuberculous matter acting like a foreign body on the tissues with which it is in contact, produces in each corresponding point of these tissues a secretion of pus which mechanically effects the division of the tubercle into clots, and acts here exactly similar to a foreign body lodged in any part of the living system. This separation of the particles of the mass into clots, and ultimately reduction to a softened mass is the result of a process of irritation not peculiar to the part, but analogous with the suppurative action established by all textures to relieve themselves of some foreign irritant. Softening commences then most frequently upon the circumference which is usually recognised as the foreign mass. The existence of encysted tubercle is strongly doubted by Dr. C. who thinks that the investing membrane or cyst is in every instance a portion of the texture in which the matter is found; when located in the lungs he has demonstrated it to be the distended walls of the air-cells in the biliary system—the dilated bulbous extremity of the hepatic radicle.

The removal and ultimate cure of tuberculous deposits is considered of frequent occurrence, and in many instances without ulceration or suppuration: in scrofulous enlargements of the lymphatic glands, as for instance, in *tabes mesenterica*, there has been a removal of the tuberculous matter, and the patient relieved entirely of the existing symptoms; and upon examination after death, from other causes, the mesenteric glands have been found to contain a chalky substance, the remains of previously existing tuberculation. In this case the gelatine and fibrine have been removed by the absorbents; leaving behind the calcareous constituent; a mode of reparation of not very rare occurrence in the lungs and other organs. Again, the entire contents of these glands have been evacuated, and converted into a fibrous tissue. The same appearances indicating the removal of the serous and albuminous parts of the tuberculous matter, and the condensation of its earthy salts, have frequently been observed in the lungs of persons in whom the previous existence of tubercular phthisis could not be doubted: but the usual termination of tuberculation of the lung, is effected by the expectoration of the matter after it has become fluid.

We now pass on to the heterologous formations, which although

they constitute one of the most important and difficult subjects of anatomico-pathological investigation, and have for a long time occupied the attention of the pathologist, are yet involved in much obscurity, particularly those which are termed malignant—as cancer, medullary sarcoma, and fungus hæmatodes. This imperfect state of our knowledge is attributable, in the estimation of our author, to the following circumstances, viz.

“The almost exclusive study of them for a long period as they occur in the external parts of the body in the form of tumours, and the partial or inaccurate observation of their primary forms, of the subsequent changes which take place in them, and of the modifications which they undergo in these and other respects, in the different tissues and organs of the body.”

Much of the difficulty in classifying these morbid productions has arisen from the reckless and indiscriminate mode of observation pursued by pathologists; for instead of examining the primary state of these formations with the successive development of their several stages, they have been content to describe each condition as a new and distinct morbid lesion, and thus established as separate degenerations the several stages in the development of one and the same pathological condition of the organ; and have given rise to the multitude of names which at present burden this interesting branch of pathological investigation. The essential character of the heterologous formations consists in the presence of some substance, either solid or fluid, which does not enter into the healthy composition of the body; presenting, however, striking differences in one or more of its characters, which have given rise to the various forms of disease, and described from their resemblance to the healthy structures of the body and other substances—as scirrhus, medullary sarcoma, fungus hæmatodes, melanosis, tubercle, pus and calculus; terms, which we have stated above, should convey no specific difference in the morbid conditions to which they are applied, and indeed Mr. Carswell remarks that the same disease has received different appellatives in consequence of the dissimilarity which is present at different stages of its development. It is evident then that the number of heterologous formations can only be determined by ascertaining the primary forms in which this substance is found, and the subsequent changes to which it is subject in the different textures and organs of the body. After a careful and accurate investigation of the primitive forms of those deposits which have as their essential characteristic some principle which does not enter into the organization of the healthy animal, and the types which they assume in their progress to full deve-

lopment, our author has determined to class them under the terms carcinoma, melanoma, pyonoma, tynoma, lithoma. Under the division carcinoma we have presented for examination common vascular or organized sarcoma; pancreatic, mammary and medullary sarcoma; and fungus hæmatodes; although these diseases are generally presumed to differ essentially in their nature, yet they warrant the classification adopted, by their presenting in their formation certain peculiarities common to all of them; by their gradual destruction or transformation of the textures in which they are located; by a tendency to affect several organs in the body; and lastly, by their possessing the same reproductive character. These carcinomatous formations differ somewhat from each other, and present us with two divisions or classes; in one the deposit manifests no disposition to become organized, its form and arrangement depend entirely upon external circumstances: in the other a tendency to organization is evinced, and in itself possesses properties, by means of which its subsequent development is accomplished, without reference to the nutritive efforts of the organ in which it is located. The first of these divisions we term scirrhomia; the second, cephaloma. The varieties of scirrhomia are established by the quantity of the foreign deposit, and its mode of arrangement; thus when it is distributed in numerous points of a hard, gray, semitransparent substance, intersected by a dull white or pale straw-coloured fibrous or condensed cellular tissue, it is styled scirrhus; if it assumes a lobulated appearance, so as to resemble a section of the pancreas, it is termed by Mr. ABERNETHY pancreatic sarcoma; if, on the other hand, it is uniformly diffused through the texture of the organ, so that a section of it resembles a slice of pork, it is called by the French, *tissu lardacé*; or lastly, when it resembles firm jelly, and is collected into masses of greater or less bulk in a multitude of cells, it is termed by Laennec, *matière colloïd*, cancer *gélatiniforme* or *aréolaire*, by Cruveilhier.

The varieties of cephaloma are determined by the appearances which the heterologous deposit assumes in different organs, or at different stages of its development. Mr. Abernethy termed it common vascular or organized sarcoma when it resembled coagulable lymph, or fibrine deprived of the red colouring matter of the blood, of a uniform, fibriform or lobuliform arrangement, with a certain degree of transparency and vascularity: on the contrary, if it was spread equally throughout a texture, and presented the appearance of a section of the mammary gland, he called it mammary sarcoma; or when it partook of the external characters of brain, he considered it to be me-

dullary sarcoma; Laennec styled the last form *matière cérébriforme*, or *encephaloïde*; BURNS, spongoid inflammation; Dr. MONRO, the milk-like tumour; the soft cancer by others; the pulpy testicle of Dr BAILLIE. In the last species the coats of the vessels which supply the tumour are so extremely delicate that they rupture from congestions, and blood mixed with the brain-like substance is effused; this accidental circumstance, together with its protrusion through the integuments, has applied to it the appellation of *fungus hæmatodes*, or fungoid disease. Our author remarks, that although the essential difference between these species consists in the former having little tendency to become organized, and the latter a greater or less disposition to assume this state; yet, it is extremely difficult to draw an accurate line of distinction between them, because the heterologous deposit when first formed does not display any signs by which we may determine whether it will or will not become organized.

Examples may be adduced to show that scirrhus, medullary sarcoma, and *fungus hæmatodes*, have been developed from the same morbid state, and not unfrequently two species present themselves in the same organ of one individual.

Let it not be inferred from these remarks that it is unimportant to distinguish one species or variety of this disease from another; since one will readily run into another still more inveterate; for the curability of the disease often depends upon the period at which we apply our remedies, and inasmuch as experience has demonstrated that all the forms of carcinoma are not equally curable; we should be the more anxious to discover accurately the state of the morbid product, and adopt in time a judicious and satisfactory remedial system. Again, the knowledge of the species will determine the rapidity of its development and its most probable result; which, when associated with the time occupied in its primary development, will enable the physician to prognosticate accurately the eventual termination.

It is evident from the above, that it is impossible to give a precise definition of carcinoma; but the following, given by Mr. Carswell, appears to approach as near the truth as is possible.

“Carcinoma consists in the formation or deposition of a peculiar substance, which presents great variety of consistence, form, and colour; frequently assumes a definite arrangement, and possesses a vascular organization of its own; gives rise to the gradual destruction or transformation of the tissues in which it is situated; affects successively or simultaneously a greater or less number of organs, or has a remarkable reproductive tendency.”

Seat and origin of carcinoma.—In order that we may ascertain

the manner in which carcinoma is formed, it is necessary that we should examine it in its forming stage, before it has produced destruction of the texture in which it is deposited. Examined in this way, it appears manifest to our author that it is either the production of nutrition or of secretion. When it results from the nutritive efforts of the system it is eliminated from the blood, in the same manner that any of the healthy constituents are separated, and thus enters into the molecular structure of the organ. On the other hand, when its deposition is effected by secretion it is found upon the free surfaces, as are the natural secretions upon the serous surfaces: independent of these locations, and as an inference from the manner in which it is formed, we are authorized to state that the carcinomatous constituent is also found in the blood: indeed, the observations of Mr. C. warrant the presumption, that in the great majority of those cases which terminate fatally from this disease, the foreign substance is to be found after death blocking up some of the larger venous trunks.

The liver and stomach will exemplify the mode in which carcinoma is primarily deposited in the molecular structure of organs. Thus, if we make a section of a liver containing round or irregular masses of scirrhus or cephaloma, we shall be able to determine the mode by which they are developed: the first evidence of the disease is a change of colour in one or more *acini*. The red or yellow colour disappears, and is succeeded by a pale milk-like or straw colour, with increase of their consistence.

During this change of colour, the form and bulk of the acini remain unaltered: now, it is evident that the acini could not retain their original form and bulk if the foreign substance was deposited in the already existing structure; for if any additional substance is added to the healthy acinus, the first manifestation of change would be the alteration of its form or increase in its bulk: but as this is not the case, but on the contrary, the evidences primarily being an alteration in colour and consistence of the acinus, we must infer that it is accomplished in a manner analogous to that in which the nutritive function is carried on. If we continue the investigation, we discover this alteration extended to neighbouring acini, and arranging themselves into groups of various sizes, from a millet-seed to a cherry, preserving at the same time the essential characteristics of the hepatic structure—the form, bulk, and arrangement of the acini; until ultimately the bulk of the tumours increase so as to resemble a uniform, lardaceous mass, or some other form of the carcinomatous deposition.

The formation of carcinoma in the stomach is very similar to the process pursued in its development in the liver. The muscular coats and intermuscular cellular texture favour the examination in consequence of their colour and fibrous arrangement: the first manifestation is the paleness of the muscular fibre and its increase in consistence; here, as in the liver, the bulk is not altered in the least degree; neither is there a change in its form and distribution. The intermuscular cellular tissue acquires a more firm and consistent character; and as the disease progresses the bulk becomes greater, the structure of the organ assumes a fibriform arrangement, and becomes hard and transparent, presenting us with the characteristics of scirrhus. At a still more advanced stage of disease, the nutritive process of transformation is no longer distinguishable; the muscular and cellular tissues being completely converted into a homogeneous mass; which is eventually softened down, or assumes the mammary, medullary, or hæmatoid characters of carcinoma.

Our author conceives that the formation of carcinoma on serous surfaces, corroborates in a striking manner the correctness of his views in relation to its development; this mode of production he terms secretion; and although the difference between it and that which we have above called nutrition is merely nominal, yet we may contemplate it here as the result of the usual secreting process of the organ, without the slightest alteration in its texture: it is therefore a most conclusive evidence that an alteration in texture is not essential to the development of this disease, but that it owes its origin to other causes, and must be referred to some peculiar condition of the great *pabulum vitæ*.

Mr. Carswell remarks that the trite but important observation, that hundreds of individuals are affected with inflammation, without this local disease being followed by any other than its usual effects, places in the clearest light the necessity of a previously existing modification of the economy, as the immediate and essential condition of the speciality of the heterologous formations when they occur in conjunction with inflammation. We illustrate this by the following case, which is not an unfrequent occurrence. An individual has a scirrhomatous or cephalomatous tumour on the external surface of the body. He has an attack of pneumonia, of which he dies in the course of a few days: on examining the lungs or pleura, instead of finding an effusion of serum, coagulable lymph, or pus—the usual results of inflammation—we discover that the lung is converted into a solid mass resembling a section of fresh pork; in fact, it is in a scirrhus state.

We cannot explain this upon the ground that the matter of the external tumour is absorbed, and thereby contaminated the blood, and ultimately deposited in the lung structure; for admitting this to be true, the difficulty is not yet solved, for how shall we explain the production of the first tumour? Again, such depositions occur after inflammation in individuals who have had no previous carcinomatous tumour, we must therefore pass beyond the local disease, viewing it merely as the expression of a condition of the system by which carcinoma is produced, and from which the disease originates.

We have stated above, that the heterologous substance accumulates in the blood, and now refer to it as an important fact, illustrating in a great degree the formation of carcinoma in the molecular structure of organs, or on the free surfaces of serous membranes. That this substance does accumulate in the blood, is apparent from its presence in the vessels which ramify in carcinomatous tumours, or in their immediate vicinity; from its being traced in the vessels of an organ in which this substance is found from their trunks to their capillary terminations; from its being detected in vessels having no direct communication with an affected organ, as, for instance, in a small portion of the vena portæ; and lastly, from its presence in the blood effused into the cellular tissue, and on the surface of organs.

Carcinomatous substance has not been detected in the arteries, but always in the venous trunks and their capillary ramifications; the contractility of the artery constantly urges on the circulating fluid, and thereby prevents the accumulation of any substance within its walls. The characters of carcinoma occurring in the veins, vary considerably; it is either the lardaceous, the mammary, medullary, or hæmatoid form, isolated into masses so conspicuous, that we can readily distinguish one from the other; at another time it takes the form of the vessel, and is merely in contact with it, and sometimes we have it connected to the coats of the vessel by a thin layer of colourless fibrine. From what has been said of the origin and subsequent development of carcinoma, it is evident that it must be ascribed to a peculiar condition of the blood, from which the morbid constituent is separated during the acts of nutrition or secretion, and not to any state or condition of the texture or organ in which it is formed; but we cannot omit a brief notice of the explanation of the formation of this substance afforded by Dr. HODGKIN in the *Medico-Chirurgical Transactions*, in which he labours to prove, that the presence of a serous membrane of a cyst-like character is essentially

necessary for the production of carcinoma. To this view Mr. Carswell objects most decidedly, remarking, that he does not deny but that the heterologous deposits are sometimes provided with serous cysts, but that it is far from being the prevailing provision, and that when it does occur, it is to be explained by the fact, that the deposit is not on the free surface of the serous membrane, but in the sub-serous cellular tissue, external to the cyst, and carrying the serous surface before it; this view, he contends, is correct in all the instances cited by Dr. Hodgkin. The existence of cysts is never observed in the liver, coats of the stomach, lungs, kidneys, brain, lymphatic glands, spleen, and blood, and whenever we find them in the ovaries, testes, or mammæ, they must be esteemed a mere coincidence, or as a consequence of the disease, and not as a cause or necessary condition of it.

The physical characters of carcinoma are contemplated under the form, bulk, colour, and consistence, which it assumes in the various textures and organs of the animal body. The form of carcinoma varies greatly, and is in some degree dependent upon the mode in which it is deposited; when it is formed by the nutritive powers of the organ, it presents us in its early stage the form of the healthy structure of the organ; thus, in the acini of the liver we have the heterologous deposit subscribing accurately to the external contour of the sound or healthy granule of the organ; in the stomach a similar state of the carcinomatous formation takes place; the muscular, cellular and mucous tissues of the organ determine the primary form. But in the forming stage in the brain, lymphatic glands, and testes, the original condition of the organ is not apparent, in consequence of the heterologous mass assimilating in colour the healthy structure of these organs. As the disease progresses, the form and arrangement varies, and ultimately assumes one of these conditions—the tuberiform, stratiform, or ramiform. The tuberiform arrangement is by far the most frequent condition of carcinoma. This arrangement arises frequently in the interior of organs, from the uniform density of the organ compelling the deposit to take the globular form; from this cause we find that it is by far the most frequent occurrence in the liver. On the secreting surfaces of serous membranes the globular is soon converted into the pyriform node, either in consequence of its mode of attachment, or of less resistance being opposed to its growth in one direction. When it is accumulated in separate portions of the cellular tissue, and included within a capsule, it has a lobulated appearance, and in the sub-mucous tissue it exhibits the

cauliflower or mulberry form. The stratiform deposit is more frequently found in the sub-serous cellular membrane, located in layers of various size, and presenting no definite arrangement; it is most frequently found in their circular patches, from the size of a pin's head to an inch in diameter. This form of carcinoma is seldom recognised without the presence of disease in some important organ. The third or ramiform arrangement of carcinomatous matter is dependent upon its location in the veins; it is frequently discovered in the emulgent vein and its ramifications, so that a section of the kidney presents this matter escaping by pressure from the injured vessels. It is also met with in the minute and larger venous vessels of the stomach, in the vena portæ, lacteals, and lymphatic glands.

The quantity of the morbid product deposited either in the structure, or on the free surfaces of organs, varies greatly; but as a general rule, we may say it is deposited with far more freedom upon the free surface than in the structure of an organ. In the liver we have it from the size of a millet-seed to an orange; in the lungs, testes, and mamma, in consequence of the yielding character of their structure, it may accumulate to an immense size; while in the inter-muscular and subcutaneous cellular membrane it is freely diffused throughout its whole extent. Mr. Carswell remarks, that pressure will retard the development of carcinoma, and if it were possible to exert constant pressure, its increase might be restrained, and the disease so circumscribed as to render it less liable to terminate fatally; but it should also be borne in mind, that while pressure exerts considerable influence upon its development, yet when it is afterwards removed, the disease progresses with astonishing rapidity, and speedily hurries its victim to the grave.

The colour of carcinoma is of great importance to the pathologist, inasmuch as it is entirely different from that of any other of the heterologous formations, and will therefore indicate with unerring precision the presence of this deposit in any texture or organ; it is most generally white, with a shade of gray or blue, sometimes it is yellowish, or brown, or red, in consequence of the colour of the organ in which it is situated, or from the presence of blood, bile, pus, or some other accidental circumstance.

“ But the principal modifications of colour of carcinoma are seen in the several varieties of both species of the disease; these varieties, as I have already stated, resembling more or less in colour that of the organ or tissue, whence have been derived their respective appellations, as that of cartilage, of the pan-

creas, of fresh or boiled pork, of coagulated albumen or fibrine, of the mammary glands, of the cerebral substance, or a mixture of the latter and blood."

It is evident that our author considers the varieties of carcinoma to be dependent upon the state or structure of the organ in which they repose, and not upon any essential or specific difference in the matter deposited, for one of his fundamental positions appears to be, that the blood must first undergo a change in its condition, and contain the essential principle of this morbid mass; during the process of nutrition and secretion, it gives up this principle, which, from its contiguity to highly vascular textures, becomes the recipient of arterial ramifications from the adjacent vessels, and ultimately presents us a more or less perfect organization; if, on the other hand, its deposition is effected in a less vascular or imperfectly organized tissue, it manifests less disposition to become organized.

The consistence of this substance has been esteemed one of its most important physical characteristics; when it is of greater consistence or firmness than the organ in which it is embedded, it has been termed scirrhus, and regarded as in its incipient or forming state, and on the contrary when it has less firmness, it is said to be the result of the softening process; that is, it has advanced another stage in the progress of the disease; these views are shown by our author to be erroneous, since the carcinomatous matter may in its first stage be either "as hard as cartilage, soft as brain, or fluid as cream." The consistence depends on the nature of the organ in which it is deposited; the elementary composition of the deposit, and the changes which take place either in the deposit itself or in the tissue with which it is in contact. Accurate investigations of the chemical characters of carcinoma are not easily obtained, in consequence of the difficulty of insulating the matter from the texture of the organ around it; but that furnished by Lobstein in his "*Traité d'Anatomie Pathologique*" is assumed by our author as the most correct; from which it appears that in seventy-two grains of scirrhus breast were found—albumen, two grains; gelatine, twenty; fibrine, twenty; fluid fatty matter, ten; water, twenty grains: nearly the proportion of the above elements were found in seventy grains of scirrhus uterus. It is just to observe that the chemical composition of cephaloma is not uniform in all its stages; thus in its crude state it contained a greater quantity of gelatine than albumen; while in its stage of softening it contains a greater quantity of albumen than gelatine. A carcinomatous tumour anatomically examined presents four elements; carcinomatous matter, cellular, fibrous and serous tissues, and blood-vessels. The carcinomatous

matter constitutes by far the greatest bulk of the tumour, and is either uniform, granular, radiated or lobular in its arrangement. The cellular tissue is mostly small in quantity, and intersects the tumour in various directions, encloses the matter, separates it into granules, bundles or lobules, and serves to conduct blood-vessels for its nutrition and growth. The fibrous tissue does not often enter into the formation of carcinoma as we are now considering it. The serous tissue, on the contrary, is frequently present, forming either a capsule to deposit, or giving rise to cysts containing gelatinous, albuminous or other fluids. The blood-vessels vary in size, and are frequently very numerous; their walls are extremely delicate; and have much more of a venous than arterial character. They are, as we have above remarked, derived from those of the surrounding tissue; they assume the appearance of striæ or slender streaks of blood, and afterwards acquire a cylindrical arrangement and ramiform distribution, constituting what is termed the proper circulation of cephaloma. The blood-vessels in scirrhus seem to be the unaltered vessels of the surrounding tissue enclosed within the substance of the morbid mass. In contemplating the physiological characters of carcinoma, the functions of circulation and nutrition actively carried on in these deposits are of the first importance: by turning our attention to the direct or collateral circulation, we have an explanation of the remarkable changes which take place during the progress of these formations. The quantity of blood and the various shades of colour of the carcinoma will depend upon the freedom with which the circulation is performed. Obstruction to the returning circulation would produce congestion of the whole or a portion of the tumour, giving rise to an increase in colour, or a rupture of the vessels, with effusion of blood in clots, producing afterwards the cerebriform character of carcinoma; if the obstruction is perfect the circulation in the tumour ceases, and death ensues in all its parts which have been supplied with blood by the now obstructed vessels.

“The termination of carcinoma in mortification from obliteration of the veins is far from being a rare occurrence. It sometimes occurs in whole tumours, but is most frequently observed in portions of them, or in some of the small tumours of which larger ones are frequently composed, that are attached by narrow, pedunculated extremities. The unequal development of one of these small tumours may give rise to compression of a neighbouring one; or the tissue to which they are attached may, from its unyielding nature, act as a ligature on their pedunculated extremities, and intercept the return of the venous blood through them. The protruding portion, now relieved from the pressure to which it was before subjected, increases rapidly in bulk; but the dimensions of the opening through which it passed remaining the same, a degree of constrict-

tion is produced which arrests the circulation through its vessels, when it dies and sloughs. Hence the delusive hope that nature had effected a cure of the disease, not only on account of the diminution of bulk, but also the imperfect cicatrization which sometimes follows the sloughing process. It is on the principle of diminishing the supply of blood for the nutrition and growth of these tumours, that the frequent local abstraction of this fluid, the application of cold, the use of the ligature and compression, have been recommended as the most effectual means of retarding or arresting their progress."

Congestion, hæmorrhage, softening and sloughing take place in both species of carcinoma: in scirrhoma, they originate in the vascular system of the tissue included within the carcinomatous mass, and are not less destructive than those which arise in the proper and collateral circulation in cephaloma. Nerves as a new production have never been discovered in carcinoma, although M. MAUNOIR, of Geneva, asserted that cephaloma from its resemblance to the brain was in reality the substance of the nerves effused under the influence of some peculiar morbid state.

We have thus far given an accurate and faithful analysis of what we consider to be the commencement of one of the richest contributions to pathology in the present day; and which must eventually command a high and elevated rank as authority upon the subjects treated of in its pages. While the text bears upon it the impress of a sound and philosophical mind, its illustrations indicate a chaste and discriminating taste.

A. L. W.

BIBLIOGRAPHICAL NOTICES.

XIV. *Observations on Injuries and Diseases of the Rectum.* By HERBERT MAYO, F. R. S. Surgeon to the Middlesex Hospital. London, 1833. pp. 220. oct.

Diseases of the anus and rectum are sources of great distress to a no small portion of the human family in every quarter of the globe; some of them are among the most painful, and others among the most disgusting affections which fall under the notice of the surgeon, and he who contributes in the slightest degree to elucidate their nature and treatment, deserves the cordial thanks of the profession and the public. The authors who have written upon these complaints are indeed sufficiently numerous to furnish no inconsiderable catalogue; yet it is to be regretted that the diagnosis of the various morbid changes which occur at the outlet of the alimentary canal, is still involved in great confusion. Under each of the several heads of neuralgia, fistula, piles, scirrhus, &c. we frequently find diseases enumerated which have no resemblance in their causes, nature, or location, until it has become almost necessary for an author, who wishes to be definite, to explain his own acceptation of terms familiarly employed by all: even the anatomy of the parts interested is not sufficiently borne in mind by most of the writers who treat upon their surgical treatment. Lest we should be deemed harsh or hasty in these strictures, when it is remembered that men of high merit and universal reputation are among the censured, we will mention one or two facts in explanation of our meaning. Under the heads of hæmorrhoids, we find included by different teachers of eminence, all the following affections:—varicosity of the hæmorrhoidal veins, ecchymoses about the anus, dense and firm tumours of little vascularity, partial eversions of the integuments of the anal canal, hypertrophy of the mucous membrane, various excrescences exterior to the anus, condylomata, (which are even described by some as fleshy tumours,) and probably some other enlargements, for we cannot pause to complete the list! When a surgeon, then, speaks of a case of piles, who shall comprehend to which of these heterogeneous affections he alludes? As to the vagueness in using anatomical terms, we will merely refer to the almost constant habit of speaking of the sphincter muscles in the singular number, as though there existed but one sphincter; a habit well calculated to confuse the student in his practical inferences, as will be perceived hereafter.

The little work before us is by no means free from the defects just mentioned, but it is written, upon the whole, with considerable perspicuity, and although it may not add very largely to the stock of knowledge already possessed by the profession, it contains many valuable facts and suggestions, marked by a due degree of originality.

The first chapter of Mr. Mayo's work treats of *lacerations of the rectum* whether partial or complete. To the former species of laceration he applies the term *fissure of the mucous membrane*. It is a transverse rent in the internal membrane caused by the action of indurated fæces in persons habitually costive, and is lo-

cated *just within the sphincter*, (i. e. the internal sphincter.) This accident must not be confused with the *fissure of the anus* of Boyer, which is generally seated just within the *external sphincter*, and is always longitudinal, for these affections are very widely different both in symptoms and treatment. Exquisite soreness is generally felt at the moment of the accident, and is renewed, with increasing severity, at each succeeding stool. The rent soon degenerates into an ulcer, and is readily recognised by the finger. It is surrounded by slight hardness, and is almost always found at the back part of the canal. The mode in which this laceration is produced must be obvious to all who are acquainted with the anatomy of the part. It is at first very simple in its nature, and yields readily to the daily use of enemata of warm water, the application of mild mercurial ointment, and proper laxatives; but, when neglected, it may produce a long train of deceptive symptoms, and may become exceedingly unmanageable, yielding only after the division of the sphincter, as performed in the operation for fistula in ano. Several very interesting cases are given, and the third case deserves especial attention, because its nature was at first mistaken.

The patient had been labouring under a train of anal symptoms for fifteen months previous to his application to Mr. Mayo; and the rent appears to have taken place but one month after their first commencement. The symptoms were briefly as follows:—heat and pain at stool, continuing some hours, followed by numbness; during the pain the anus was strongly drawn upward. The pain was extended to the hips and sacrum. A slight mucous discharge followed the laceration. Other symptoms led to a suspicion that the prostate gland was affected. The patient urinated frequently, pain deeply seated in the perineum followed the discharge, and mucous flowed from the urethra. The prostate gland was large, and tender on pressure. The patient was treated by the hip-bath, leeches to the perineum, and cups to the sacrum, opiate suppositories, and tepid enemata. The bowels became regular, but the other symptoms were unabated. At last the ulcer was detected, and as it did not yield to the usual measures of Mr. Mayo, the sphincter was divided, and the incision prevented from healing immediately by means of lint. Prompt relief was experienced, and under the application of mild mercurial ointment, the ulcer was cured. The affection of the urinary apparatus subsided, *pari-passu*, with the rectal disease.

This case is highly interesting, as an elucidation of the strong association between the urinary apparatus and the anus, and also from the resemblance between the symptoms described and those of the first stage of the neuralgia of the anus of M. Campaignic, or the *tic douloureux* of the bladder, as it is termed by many surgeons, with at least *equal* propriety. Indeed, it may be laid down as a safe and valuable practical precept, that when there is a difficulty in assigning an obvious cause for any unusual train of symptoms in the bladder or urethra, the anus and rectum should be carefully examined, and vice versa.

Next in order follows a case of recto-vaginal communication from complete laceration of the intestine; then another, of stercoraceous abscess from the same cause, in which there is nothing novel; both accidents occurring from costiveness. Mr. Mayo then gives some terrible instances of laceration from the use of syringes; among the rest he refers to a preparation in St. Bartholomew's Hospital from the body of a patient killed by the injection of a pint of water-gruel

into *the cavity of the abdomen!*—and he states that a similar accident has occurred in private practice! Indeed, it is wonderful that more numerous disasters of this kind are not forced upon the notice of the public, when every ignorant nurse, and even patients themselves, are encouraged to thrust three or four inches of an inflexible metallic tube into a tortuous canal, of which they understand not the course, and when it is well known that if it is introduced in the usual direction, it comes to bear directly on the prostate gland, long before it has entered to that extent! No syringe, placed in unprofessional hands, should be furnished with more than two inches of pipe—Mr. Mayo says one inch and a half. The neglect of this precaution is believed to be one of the principal causes of the alarming frequency of diseases of the anus on the continent of Europe, and especially in France.

Our author next proceeds to speak of the lacerations occurring during labour, the horrible character of which, when they prove extensive, are well known to all as amongst the most distressing that can occur to a surgeon; fortunate indeed it is, that they are rare! Mr. Mayo has been repeatedly successful in closing extensive rents involving the sphincters, by relieving the tension of the sides of the opening, caused by the retraction of those muscles, by means of lateral incisions, such as are made in the operation for fistula. The muscles being thus divided on each side, the edges of the rent, if recent, are repeatedly stimulated by nitrate of silver, and if long neglected, are pared off and drawn together by sutures. After the rent is healed, the lateral incisions are allowed to heal, and the sphincters recover their power.

The second chapter treats of *protrusion of the rectum*. It contains a very fair cursory view of the affection, but we observe nothing of novel interest, and must therefore confine ourselves to a very few remarks. We must protest against the grounds upon which Mr. Mayo opposes the opinion attributed to Dupuytren, that prolapsus ani is a displacement of the mucous and submucous tissue only. This opinion is decidedly that of the mass of the profession, and our author opposes to it, firstly, a figure from a preparation in the museum of King's College, in which an inversion of all the coats of the intestine is presented, but without any history of the circumstance; and secondly, a case of his own, in which, after removing the lower end of the rectum, together with the sphincters, prolapsus of the whole intestine supervened. Upon such evidence he appears to draw the conclusion, that prolapsus ani is invariably an inversion of all the coats! No doubt the whole thickness of the intestine is sometimes involved, though we have always been inclined to doubt the possibility of such an occurrence in proper prolapsus ani, being disposed to attribute the complete eversion to the gradual descent of a true intussusception of the rectum occurring originally at the superior margin of the internal sphincter, or at the upper part of the sac of the rectum—both which accidents we have examined particularly, but we cannot pause to argue the point at present. Mr. Mayo objects to M. Dupuytren's mode of operating for the cure of confirmed prolapsus, by removing several folds of the integument around the anus; he recommends the excision of a single fold, (p. 43;) but certainly the number of folds removed should bear some relation to the mass of relaxed skin, which is often exceedingly redundant, and by its constant pressure dilates and weakens the sphincters, especially the sphincter externus.

The third chapter treats of *hæmorrhage from, and pain in the rectum*. In speaking of the nervous affections which not unfrequently deceive the practitioner, in cases of hæmorrhage from the rectum, the author refers to the very interesting case of a lady mentioned by Mr. Brodie in the Medical Gazette, Vol. V. where the disease was mistaken for stricture of the œsophagus. We recently heard from Dr. Samuel Jackson, of a most singular instance of hæmorrhoidal flux simulating disease of the heart, and at first treated as such. Whenever a female presents that peculiar aspect that marks the habitual and excessive loss of blood, accompanied by severe palpitations of the heart, or inexplicable nervous disorder of any kind, we should always assure ourselves as to the existence of hæmorrhage from the rectum as well as from the uterus.

In chapter fourth Mr. Mayo considers the nature and treatment of piles. As our limits will not permit us to analyze its contents, we dismiss it with the remark, that the second section, *on external piles*, is liable to the censure passed at the commencement of this article; it confuses, under one general head, several very distinct affections. At page 99, the author judiciously remarks, that "as a general rule, growths external to the anus are to be removed by the scalpel, as the tumours which form within, are, for the most part, best removed by the ligature," we cannot forbear alluding in this place to the beautiful method of operating adopted by Dr. Physick in cases of tumour partly within and partly external to the verge of the anus. He employs the ligature, but in order to prevent the terrible and dangerous agony resulting from the action of the ligature upon the exquisitely sensitive integument about the margin, he divides the integument round the external portion of the tumour, and carries the ligature through the route of the incision so as not to act upon any portion of skin, while he enjoys every security against dangerous loss of blood.

In the succeeding chapter, on *fistula in ano*, we are struck with the light manner in which the danger of hæmorrhage after operations is treated.

"It sometimes happens, if the sinus extends some length by the side of the rectum, that a slight hæmorrhage follows the operation. This, however, is seldom more than bathing the part with cold water, and keeping it exposed, will arrest. *I have never seen it extend beyond this.* Still it is evident that smart arterial hæmorrhage may sometimes take place from the rectum, either after operations for fistula, or on other occasions." p. 118.

The author objects to the operation by ligature as unnecessarily tedious. We are not among those who live very strongly in dread of hæmorrhage from ordinary incisions about the rectum, being fully convinced that although it is often alarming in extent, and at other times concealed and insidious, yet it is controllable in most cases when the surgeon is both vigilant and thoroughly competent; but he who would undertake to lay open by the knife the whole extent of some fistulæ that are met with in the course of a tolerably extensive practice, would certainly find to his cost that there are vessels in the rectum, that cannot be checked by cold and exposure, or even by the needle and ligature, with all the aid of Weiss's improved speculum ani, yet these fistulæ yield readily to those means against which Mr. Mayo objects.

The remainder of the work is defective in arrangement, but it is replete with valuable matter. Twenty-three pages are devoted to a subject of great importance, but one which, perhaps, may be said never to have received a phi-

losophical investigation;—the remote and immediate causes of costiveness. The theme is one that would require much more space than the entire volume occupies, in order to its full discussion, but short as are these remarks, they possess great interest, and are quite sufficient to expose the fallacy of the common custom of forcing or attempting to force the peristaltic action in all cases alike by means of purgatives. Next follow some remarks on the introduction of instruments into the rectum—rendered doubly valuable in consequence of the freedom with which some practitioners have of late recommended the dilatation of strictures in the sigmoid flexure of the colon, &c. operations that have been recommended with far too little caution, and which require consummate dexterity, the most accurate tact, and a profound knowledge of the anatomy of the parts, to render them even tolerably safe. According to Mr. Mayo, a good wax rectum bougie should be perfectly flexible when dipped in warm water. Even when perfectly flexible it meets with resistance after entering five or six inches, from its catching in the sacculi of the intestine, which it is impossible to avoid, and which it pushes before it like so many blind sacs. If force is used, the bougie tears the gut and enters the belly. Some nicety is required to distinguish this resistance from stricture, and surgeons are occasionally deceived. By gently withdrawing the instrument, changing its direction, and then again advancing it, the proper canal may be followed; Mr. Mayo makes no exception to this rule, but there is a preparation of a healthy rectum in the cabinet of Dr. Horner, Professor of Anatomy in the University of Pennsylvania, which we presume could not possibly have given passage to a bougie. An instrument from half to three-quarters of an inch in diameter is considered quite large enough, and if it passes readily without pain it may be safely presumed that there is no contraction. Before the introduction a double bend should be given to it—one to adapt it to the curve of the sacrum, the other to meet the inclination of the sigmoid flexure to the left, but as this flexure in some rare cases inclines to the right, the surgeon must be awake to any unusual resistance, and take his measures accordingly. Fortunately, it is seldom necessary to introduce the bougie beyond four or five inches—though Mr. Mayo once passed it three feet into the canal! The introduction of flexible tubes requires still greater care, because they are more liable to become entangled.

“The great point which cannot be too strongly impressed on the mind of the practitioner, is the extreme delicacy of the part, and the readiness with which it will tear under very moderate pressure.”

The subject of strictures of the rectum, both spasmodic and permanent, is treated at some length; much stress is laid on the proper regulation of diet as a means of counteracting the former, and many practical hints are given for the management of the bougie in the latter. Numerous highly interesting cases are narrated, and in several of them the permanent stricture was divided. This operation, however, the author does not recommend except under very pressing circumstances, because of the danger of concealed hæmorrhage into the rectum, which sometimes goes on to an alarming extent. (p. 174.) Cases are also given of strictures of the sigmoid flexure, and other parts of the colon, and of obstructions from invagination of the superior within the inferior portion of the rectum, as described by Mr. Earle and Mr. Chevalier. Then follows a very

short notice of spasmodic and permanent contraction of the anus, the former of which he considers as “a kind of cramp.”

The seventh, and last chapter, treats of cancer of the rectum in its two distinct forms, the one attended with firm, cartilaginous thickening of the muscular coat, with abrasion of the mucous coat, the other producing a fungoid growth, and attended with much greater thickening. The various means of lessening the evils inseparable from these incurable affections, and of prolonging life by regimen, the bougie, incisions, &c. are described.

We have then an account of the excision of a carcinomatous tumour within the rectum, by Mr. Crosse of Norwich, terminating ultimately in a return of the disease, and death: and a case in which Mr. Mayo removed the lower portion of the intestine, together with the sphincters, for a similar complaint. The patient enjoyed considerable comfort after the operation. The cicatrix formed a canal which neither embarrassed the discharge of fæces materially, nor permitted their involuntarily flux. Irremediable prolapsus supervened, and the patient died of abdominal inflammation about two years after the operation. The work concludes with another case of carcinoma terminating fatally after the partial removal of the diseased mass by ligature.

This treatise certainly contains much valuable matter; it is written in a lucid style, though it bears marks of haste, which are perhaps a sufficient explanation of its imperfect arrangement. The strongest censure which we pass upon it is a rare one in these latter times—it is too short; had it pleased the author to bestow upon the subject a little more time and space, the work would have been more worthy of the powers and practical information of the writer, and of the importance of the subject; and yet, perhaps, it is ungrateful to complain while we acknowledge that the obligation conferred is by no means inconsiderable.

R. C.

XV. *An Investigation into the Remarkable Medicinal Effects resulting from the External Application of Veratria.* By ALEXANDER TURNBULL, M. D. London, 1834. pp. 96.

Almost all the plants belonging to the natural order Colchideæ are possessed of energetic medicinal properties; this is owing to a peculiar principle common to them all—discovered by Pelletier and Caventou, and which has received the various names of *veratrinum*, *veratrina*, *veratria* and *sabadilline*. In a late memoir by Mr. Couerbe, it appears, however, that this substance is not a simple body, but is composed of three separate principles, which he terms, *veratrine*, *sabadilline*, and *mono-hydrate of sabadilline*.

The veratria of commerce is in the form of a fine white powder, without smell, but acting as a violent sternutatory. Its taste is acrid, and when introduced into the stomach, even in minute doses, acts as a powerful emetic and purgative. When applied externally, in the form of ointment, however, a very different series of actions are produced—“when rubbed upon the surface of the body to the extent of six or eight grains a day, for several weeks or even months together, it calms irritation, removes pain, and produces considerable elevation of spirits.” Dr. Turnbull also states that such a degree of constipation is often induced as to require the use of purgatives. In diseases attended

with aqueous effusion, the external application of veratria is attended with the happiest effects, as it acts as a powerful diuretic, which it never does in other cases.

Dr. Turnbull goes on to say, that the ointment causes no outward marks of irritation on the skin, even when the friction has been continued for some length of time; in some rare instances a slight blush is produced which soon vanishes. After some grains have been rubbed in, however, there is a sense of tingling and warmth in the part, and until this is produced, the peculiar effects of the medicine do not manifest themselves. After the ointment has been used until the general system is under its influence, the feeling of heat and tingling extends itself over the whole surface of the body, sometimes accompanied with involuntary twitchings of the muscles of the mouth and eyelids, but these latter symptoms disappear if the use of the ointment be discontinued for a day or two.

Dr. Turnbull has found that where veratria was applied to a part denuded of the cuticle, although the effects on the system were much greater than when applied to an unbroken surface, yet, that the extreme irritation which ensued forbade a repetition of the practice.

After having thus given an account of the general effects of the medicine, the author next proceeds to the consideration of the diseases in which he has found it useful. The first of which he speaks are *affections of the heart* in which although there is no decided organic derangement, the symptoms are of such a character as to be exceedingly distressing, as difficulty of breathing, with cough and expectoration, inability to remain any length of time in a recumbent posture, palpitation, &c. &c.

In these cases he recommends the ointment to be made with fifteen to twenty grains of veratria to the ounce of lard, and of this, a piece the size of a nut to be rubbed over the region of the heart for five minutes, once a day. During its action upon the system, the pulse increases in strength and regularity, and the distress and anxiety gradually wear away. Sometimes, however, the first or second application of the remedy induces a great increase of the palpitation, but when this irritation subsides, all traces of disease disappear with it.

Dr. Turnbull exemplifies its use in these anomalous disorders, by a variety of cases, which are extremely interesting and fully confirm his statements of the efficacy of the remedy. The next class of disorders in which he has found veratria useful are the neuralgic affections, and he states that in these the relief afforded is speedy and almost certain, and that in tic douloureux the paroxysm has been brought to a termination by the first friction, and never returned. In most cases the ointment of the strength above-mentioned has been found sufficient, but in some cases it has been requisite to use it of greater power, even as high as forty grains to the ounce of lard.

In rheumatism Dr. Turnbull has used it in the acute stage of the disease with decided benefit after the usual antiphlogistic remedies had been resorted to. From the extent of surface affected in this disease, and the quantity of ointment required to be used, the proportion of veratria should not be as great as in the cases last mentioned, but should bear a certain relation to the space over which it is applied.

In paralysis he has not been enabled to try the effects of this remedy in suf-

ficient number of cases to lay down any general rules for its employment, but in those in which he did use it, he was well satisfied with its effects.

In dropsies he speaks of its successful employment in the highest terms, especially in hydrothorax, ascites and anasarca; many cases of which he states were cured in a week or two, even where the severity of the symptoms was such as to threaten the life of the patient in a few hours. There appear, says he, to be two states of the disease in which the veratria is useful. One, where the pathological condition of the organs on which it depended has been removed; yet, where the aqueous effusion remains from a want of action in the absorbents; the other, where the organic change is such as will admit of no remedy. In the former, the use of the veratria soon restores the patient to health, and in the latter, great relief is afforded. It is necessary to obtain the full benefit of the remedy in dropsy, that preliminary measures may be adopted to put the constitution of the patient in as good a state as possible before it is made use of.

In addition to these diseases, Dr. Turnbull has derived much benefit from the use of veratria in gout, amaurosis, &c. He concludes by stating, that it is of primary importance, that the veratria be in a state of purity, or the practitioner will be disappointed in the expected results, and adds that much found in commerce is adulterated with phosphate of lime.

We are afraid that Dr. Turnbull, like most other advocates of new remedies, has viewed this article in too favourable a light, and that a more extended use of it will show that it is not as infallible as his book would lead us to believe. At the same time it richly deserves a trial, and we hope the results may be as successful as those of the author of the memoir. R. E. G.

XVI. *Transactions of the Medical Society of the State of New York. Vol. II. Part I.* To be continued annually. Albany, 1834. 8vo. pp. 176.

The printed transactions of the various medical associations of Europe, rank among the most interesting and useful of the works which compose the library of the practical physician. Among the essays they contain are to be found the original sketches, or more properly the nuclei of many of those valuable monographs in the various departments of our science, for which the profession is indebted to the industry and talents of some of its most distinguished members.

In this country but few of our medical institutions are in the habit of publishing their own transactions: the members preferring, in general, to present their respective communications to the public through the medium of some one of the medical journals published amongst us. The latter practice is in many points of view, we are persuaded, to be preferred. However more imposing a volume of medical transactions may seem, yet, from the long intervals at which such works ordinarily appear, the very great expense attending their publication, and their consequent contracted circulation, it is evident that the interests of all the members of the medical profession, as well they who communicate as they who seek for information, are far better served by inserting the transactions of medical societies in the professional journals already established, than by publishing them as separate works. In relation to this as well as to all other subjects of a scientific nature, utility should be preferred to every other consideration.

Notwithstanding but few volumes of American medical transactions have appeared, these few will bear a very favourable comparison with the printed transactions of the most celebrated of the medical institutions of Europe. In evidence of this statement, we might adduce, in particular, the transactions of the state medical society of New York, the contents of the initial part of the second volume of which we are now about to notice. It contains eight articles on different subjects, no one of which can be read by the physician without interest, nor without his deriving from it some important practical hint.

Art. I. *Annual Address on Dysentery.* By Thomas Spencer, M. D.—In this essay we have an excellent, though concise account of the symptoms and causes of dysentery, (in the course of which the writer presents some judicious remarks upon the nature of epidemics generally) a very correct view of the pathology of the disease, and an able outline of its proper treatment.

Dr. Spencer ranks blood-letting, both general and topical, among the most important remedies in the ordinary cases of dysentery. Its neglect in the early stages of the attack has in very many instances, we are persuaded, subjected the patient to a very great amount of unnecessary suffering, and not unfrequently to such neglect is to be attributed mainly the fatal termination of the disease. Dr. S. very properly objects to the usual plan of irritating the diseased bowels by repeated doses of active purgatives; preferring to abate the morbid irritability and increased action of the intestines by the judicious employment of opiates.

Dr. S. speaks strongly in favour of emetics in the treatment of dysentery. In the very onset of the disease, when the stomach is free from any very decided irritation, we have derived from their administration the most decided good effects; but at a later period we doubt very much the propriety of resorting to their use.

Art. II. *Medical Topographical Report of the County of Columbia, drawn up by a Committee of the Medical Society of that County.*

Art. III. *Medical Topographical Report of the County of Madison.* By Alvin Foord, M. D.

Both of these are useful and interesting papers. Our physicians generally are beginning to appreciate the importance of similar reports, and we trust that the time is not far distant when we shall be presented with them from every section of the United States. Such reports when accurately drawn up afford materials for a medical geography of the country, and are calculated to shed not a little light upon the causes of endemic, if not of epidemic diseases generally.

Art. IV. *Observations on the Use of Cold Applications in Local Inflammation.* By Dr. Campble Waldo.

The remarks of the author are confined principally to the importance of cold applications in wounds of the large joints, as an efficacious means of preventing the occurrence of inflammation, as well as of reducing it when present. The correctness of the views advanced by Dr. Campble are supported by general experience. So simple and at the same time so powerful a remedy is cold, whether applied in the form of cold water or of ice, in preventing and reducing inflammation, that in a large class of injuries, and of external and internal diseases, it may with great propriety be ranked, upon the list of antiphlogistics, immediately after general and topical blood-letting.

Art. V. *On the Use of Opium in Bowel Affections.* By C. King, M. D.—In the

present paper Dr. King confines his remarks almost exclusively to the use of opium in the treatment of colic. He commences by pointing out the folly of attempting the cure of this disease by a course of purgation. Consisting as it does, essentially, in an irritation of the mucous membrane of the large intestine, which in the more violent grades of the disease is liable to run rapidly into the most acute inflammation, and to terminate in gangrene, unless promptly arrested by appropriate remedies, it is evident that purgatives can have no other effect than to increase the irritation which constitutes the disease, and to accelerate its fatal termination.

“In almost thirty years practice of medicine,” the Doctor observes, “I never saw a case of colic in which I could trace constipation of the bowels to be the exciting or proximate cause. With me, then, there is no reason why cathartics should cure colic, on any other principle than that of depletion. The difficulties which accrue from the exhibition of cathartics in this complaint are often insurmountable and fatal to the patient. These considerations have induced me to abandon the use of cathartics in colic, and to restore this conclusion—that the first stage is the time for the physician to act. In this stage the indication of cure are, to remove the spasm and morbid sensibility from the intestines. To answer these indications, the warm bath, semicupium, fomentations of the abdomen, and injections, are useful, and ought not to be omitted. But when the attack is severe, the spasm violent, and the sensibility great, relief is only to be obtained on general principles. These are blood-letting and opium. Bleed as copiously as you would in pleurisy, and then give opium in as large doses as you would in epilepsy (?) and repeat the exhibition once an hour, till the patient becomes entirely free from pain, and falls asleep.”

The practice here recommended is by no means a new one, or one peculiar to Dr. King. Twenty-three years ago we were taught by our medical preceptor in all violent cases of colic to bleed copiously, immerse the patient in a warm bath, and then putting him to bed, to administer a large dose of opium. Ever since we have been engaged in practice we have pursued the same plan of treatment, and have seldom been disappointed in its results.

Art. VI. *On the Utility of Iodine in Cases of Ununited Fractures.* By Westel Willouby, M. D.—In this paper a single case is related, in which after various means had been unsuccessfully employed to produce the union of a fracture in the bones of the leg, lotions to the fractured limb were resorted to, composed of a mixture of two parts of lime water, and one of the tincture of iodine. This lotion was repeated twice a day, using at the same time considerable friction. Within eight weeks from the commencement of the use of the iodine the union of the fracture was complete.

Art. VII. *Documents and Papers Explanatory of the Progress of Cholera, in the Auburn and Sing Sing State Prisons, during 1832.*—This article contains many interesting facts in relation to the disease of which it treats, but nothing peculiarly striking or novel.

Art. VIII. *An Essay on the History, Causes, and Treatment of Typhus Fever; to which the Annual Prize for the year 1828 was awarded.* By Alfred V. Magill, M. D. of Winchester, Virginia.—This is the longest article in the present number of the transactions, occupying about eighty-two pages. The essay confers a very great deal of credit upon its author. Although had we sufficient space to enter properly into a review of it, we should be inclined to dissent entirely from the opinions of the writer in relation to the correct pathology of typhus fever,

and would be obliged to deny the correctness of a few at least of his directions for its treatment; we should, nevertheless, be constrained, viewing the essay as a whole, to bestow upon it our warmest approbation. Although the author has not in our opinion arrived at a correct view of the organic lesions by which the phenomena of typhus fever is produced, nor laid down in all its details the proper treatment for their removal, he has the good sense to perceive the folly, and reject the ridiculous notion almost universally prevalent a few years since, that the disease, namely, is one essentially of debility, demanding for its cure the liberal use of the most active and diffusible stimulants, and forbidding the employment of every species of direct depletion; a notion that has produced almost as great a destruction of human life as the disease itself.

Dr. Magill on the contrary has endeavoured to show, from the various circumstances and phenomena incident to typhus fever, that so far from being a disease of debility, it is essentially one of excitement, and frequently of inflammation and its consequences. He has further pointed out the fact, that the autopsical examination of subjects who have died of the disease, satisfactorily prove death in this variety of fever to be in general, if not always the result of inflammation, disorganizing some important part of the animal machine.

The remedies Dr. M. insists upon, for the cure of typhus, are blood-letting early and judiciously employed; active purging; the affusion of cold water upon the skin; blistering and the other items of the antiphlogistic treatment. Bark and wine he considers to be but seldom indicated. "The majority of cases of typhus," he remarks, "when treated properly in the primary stages, will not often require the use of stimulants in the last." A proposition, the truth of which we can affirm from the result of very considerable experience.

We shall not stop to notice the several points in relation to which we differ in opinion from Dr. M. In discussing the subject of typhus fever it is all important to define accurately the precise concourse of symptoms to which the term is intended to be restricted. By neglecting to do this, Dr. M. has, we apprehend, in common with the majority of medical writers been led into the error of grouping together the pathological signs of morbid conditions of various internal organs, differing materially from each other, and demanding for their removal important modifications in the nature of the remedial agents resorted to.

D. F. C.

XVII. *An Account of Jane C. Rider, the Springfield Somnambulist: the Substance of which was Delivered as a Lecture before the Springfield Lyceum.* By L. W. BELDEN, M. D. Springfield, 1834. pp. 134. 12mo.

Jane C. Rider, whose remarkable and interesting history is the subject of the small volume before us, is in the seventeenth year of her age, and the daughter of a respectable mechanic of Brattleborough, Vermont. In early infancy she lost her mother, who died of some disease of the brain. Jane resided with her father and the friends of her mother until April, 1833, when she removed to Springfield, where she is represented to have secured the confidence and love of all with whom she was connected.

"Her education is superior to that which is usually acquired by those occupying the middle rank in society. She is fond of reading, and especially

delights in poetry, her selections of which generally evince a chaste and correct taste. Though of a full habit, her appearance is prepossessing, and her plump and rosy cheeks, by the unprofessional observer at least, would be regarded as the index of perfect health. She, however, has always been subject to frequent head-aches, and other symptoms arising from an undue determination of blood to the head; and about three years since was, for several months, affected with *Chorea*. A small spot on the left side of the head, near the region which phrenologists assign to the organ of '*marvellousness*,' has since her earliest recollection been *tender*, or painful on pressure, and the sensibility is much increased when she suffers from head-ache. During the paroxysms to which she has lately been subject, this spot, at all times painful, is frequently the seat of such intense agony as to induce her to exclaim, 'It ought to be cut open—it ought to be cut open.' Her eyes are so sensible to the light, that she invariably suffers when she goes abroad in a clear day without a veil. From her infancy she has been in the habit of sleeping more soundly, and a greater number of hours, than is usual. She is seldom conscious of dreaming, and rarely wakes of her own accord in the morning. In her childhood she was in the habit of occasionally rising in her sleep, but did not manifest any of the peculiar powers on those occasions which have since rendered her case so remarkable."

She was first attacked with the singular affection about to be described, on the night of the 24th of June; it was then supposed that she was deranged. Dr. Belden who was called in, found her struggling to get out of bed, complaining very much at the same time of pain in the left side of the head. Her face was flushed, head hot, eyes closed, and her pulse much excited. Attributing the attack to the presence of undigested food in the stomach, Dr. Belden gave her an active emetic, which brought away a large quantity of green currants, after which she became more quiet, and soon fell into a natural sleep, from which she did not awake until morning; when she was totally unconscious of every thing that had passed during the night, and could scarcely be persuaded that she had not slept quietly the whole time. After the lapse of nearly a month she was attacked with a second paroxysm, during which after several attempts to keep her in bed, it was determined to suffer her to take her own course, and watch her movements. Released from constraint she dressed herself, went down stairs, and proceeded to make preparations for breakfast.

"She set the table, arranged the various articles with the utmost precision, went into a dark room and to a closet at the most remote corner, from which she took the coffee-cups, placed them on a waiter, turned it sideways to pass through the doors, avoided all intervening obstacles, and deposited the whole safely on the table.

"She then went into the pantry, the blinds of which were shut, and the door closed after her. She there skimmed the milk, poured the cream into one cup and the milk into another without spilling a drop. She then cut the bread, placed it regularly on the plate, and divided the slices in the middle. In fine, she went through the whole operation of preparing breakfast with as much precision as she could in open day; and this with her eyes closed, and without any light except that of one lamp which was standing in the breakfast room to enable the family to observe her operations. During the whole time she seemed to take no notice of those around her, unless they purposely stood in her way, or placed chairs or other obstacles before her, when she avoided them, with an expression of impatience at being thus disturbed.

"She finally returned voluntarily to bed, and on finding the table arranged for breakfast when she made her appearance in the morning, inquired why she had been suffered to sleep, while another had performed her duty. None of the transactions of the preceding night had left the slightest impression on her

mind—a sense of fatigue the following day being the only evidence furnished by her consciousness in conformation of the testimony of those who saw her.”

After this the paroxysms became more frequent, a week seldom passing without two or three, but she was not always precisely similarly affected.

“ Sometimes she did not leave her room, but was occupied in looking over the contents of her trunk, and arranging the different articles of dress. She occasionally placed things where she could not find them when awake, but some circumstances induced the belief that the knowledge of their situation was restored to her in a subsequent paroxysm. In one instance she disposed of her needle-book where she could not afterwards discover it; but after some time had elapsed, she was found one night in her chamber, sewing a ring on the curtain with a needle which she must have procured from the lost book.

“ The entire paroxysm was sometimes passed in bed, where she sung, talked, and repeated passages of poetry. Once she imagined herself at Brattleborough, spoke of scenes and persons with which she was acquainted there, and described the characters of certain individuals with great accuracy and shrewdness, and imitated their actions so exactly as to produce a most comical effect. At this time she denied ever having been at Springfield, nor could she be made to recollect a single individual with whom she was acquainted here, except one or two whom she had known in Brattleborough. Even the name of the people with whom she lived seemed unfamiliar and strange to her.

“ Generally her conceptions relative to place were, to a certain extent, correct—those relating to time were very commonly inaccurate. She almost invariably supposed it was *day*; hence her common reply when reminded that it was time for her to retire, was, ‘ What! go to bed in the day time?’ And when I say her notions relative to place were in accordance with fact, the statement requires considerable limitation. She very frequently imagined herself in a different room from the one where she actually was, and almost always in the room which she usually occupied when awake.

“ Still her *movements* were always regulated by the senses, and not by her preconceived notions of things. Her chamber was contiguous to a hall, at one extremity of which was the staircase. At the head of the stairs was a door which was usually left open, but which was once closed after she was asleep, and fastened by placing the blade of a knife over the latch. On getting up, she rushed impetuously from her room, and without stopping, reached out her hand before she came to the door, seized the knife, and throwing it indignantly on the floor, exclaimed, ‘ Why do you wish to fasten me in?’

“ Without entering into minute detail, I will only mention some of the most remarkable circumstances which occurred at this early period of the complaint.

“ Allusion has been made to her sewing in the dark, and circumstances render it almost certain that she must at that time have threaded her needle also. Some time after this occurrence she conceived the plan, during a paroxysm, of making a bag, in which, as she said, to boil some squash. She was then seen to thread a needle in a room in which there was barely light enough to enable others to perceive what she was about, and afterwards, the same night, she was seen to do it with her eyes closed. In this condition she completed the bag, and though a little puckered, as she observed, it still answered very well to boil the squash in.

“ In one instance she not only arranged the table for a meal, but actually prepared a dinner in the night, with her eyes closed. She first went into the cellar in the dark, procured the vegetables, washed each kind separately, brought in the wood and made a fire. While they were being boiled, she completed the arrangements of the table, and then proceeded to try the vegetables to ascertain whether they were sufficiently cooked. After repeated trials, she observed the smallest of them were done—she took them up, and after waiting a little, said the rest would do, and took them up also. They were actually very well cook-

ed. She then remarked that S., a little girl in the family, ate milk, and procured a bowl for her—she also procured one for herself and ate it. As the family did not seat themselves at table, she became impatient, and complained that the men never were ready for their dinner. While engaged in her preparations, she observed a lamp burning in the room, and extinguished it, saying ‘she did not know why people wished to keep a lamp burning in the day time.’ On being requested to go to bed, she objected, alleging, as a reason, that it was day; but was persuaded to do so by being reminded that she was not well, and that sleep would relieve her head. In the morning she appeared as usual, totally unconscious of the transactions of the preceding night.

“At first, the paroxysms occurred only in the night, and generally soon after she went to bed. As the disease advanced, they commenced earlier—she then fell asleep in the evening, sitting in her chair—or rather passed into the state of somnambulism; for her sleep, under these circumstances, was never natural. At a still later period, the attack took place at any hour during the day or evening. After she began to be affected in the day time, the fit seldom commenced when she was in bed; and even when she retired, as she often did, in this state, she usually remained quiet till the paroxysm subsided—though at times she continued to talk and sing. Sometimes she suffered two distinct paroxysms in one day.”

The following is the general description as given by Dr. Belden, of the paroxysms during that period of the disease in which the extraordinary acuteness of vision was manifested—after this was lost, most of the other symptoms were less marked, and many of them disappeared entirely.

“The state of somnambulism was usually preceded by a full, heavy, unpleasant feeling in the head—sometimes by head-ache, ringing in the ears, cold extremities, and an irresistible propensity to drowsiness, attended with a feeling as if weights were appended to the eyelids. There was almost always a slight contraction of the eyebrows, the cheeks were flushed, and sometimes tinged with a crimson hue. By great exertions, the fit might be put off for hours after the appearance of these symptoms; but, in order to gain this reprieve, it was necessary for her to walk, or be engaged in some active employment. The most effectual preventive was exposure to the open air. The moment these precautions were relaxed, and sometimes even in the midst of her active duties, she experienced what she described as a sense of rushing to the head, attended with a loss of the power of speech and motion. If in this state she was immediately carried into the open air, the fit was often arrested; but if this was delayed a moment too long, she lost all recollection, and could not by any efforts be aroused. To a spectator she appeared like a person going quietly to sleep. Her eyes were closed, the respirations became long and deep, her attitude, and the motions of her head, resembled those of a person in a profound slumber. During the fit, the breathing, though sometimes natural, was often hurried, and attended with a peculiar moaning sound, indicative of suffering. At times the pulse was accelerated, but generally it did not vary much from the natural standard. I have remarked, that in her first paroxysm the head was hot, but such was not commonly the case, nor was there any peculiar throbbing of the temporal arteries—the hands and feet, however, were almost invariably cold.

“Her manner differed exceedingly in different paroxysms. Sometimes she engaged in her usual occupations, and then her motions were remarkably quick and impetuous—she moved with astonishing rapidity, and accomplished whatever she attempted with a celerity of which she is utterly incapable in her natural state. She frequently sat in a rocking-chair, at times nodding, and then moving her head from side to side with a kind of nervous uneasiness, the hand and fingers being at the same time affected with a sort of involuntary motion. In the intervals of reading or talking, and even when engaged in these very acts, her nods, the expressions of her countenance, and her apparent insensi-

bility to surrounding objects, forced upon the mind the conviction that she was asleep. Occasionally she was cheerful, disposed to talk, and willing to exercise her powers; the greater part of the time she was irritable and petulant. Pain in a circumscribed spot on the left side of the head was, I believe, always an attendant on the paroxysm, and frequently occasioned a degree of suffering almost beyond endurance. To this spot she invariably pointed as the seat of her agony when she repeated the expression, "it ought to be cut open, it ought to be cut open." Occasionally the whole system was thrown into agitation, and she presented the appearance of a person in a violent fit of hysterics.

"Her eyes were generally closed, but at times they were stretched widely open, and the pupil was then very considerably dilated. These different states of the eye seemed to occasion no difference in the power of seeing—she saw apparently as well when they were closed as she did when they were open. In the day time she always had the eyes covered with a bandage during the paroxysm, nor would she allow it to be removed for a single moment, unless the room was unusually dark. In order to test the sensibility of the eye, I took one evening a small concave mirror, and held it so that the rays proceeding from a lamp were reflected upon her closed eyelid. When the light was so diffused that the outline of the illuminated space could scarcely be distinguished, it caused, the moment it fell on the eyelid, a shock equal to that produced by an electric battery, followed by the exclamation, 'why do you wish to shoot me in the eyes?' This experiment was repeated several times, and was always attended with the same result. It was also tried when she was awake, and the effect, though less striking, was very perceptible. The same degree of light thrown on my eyelids, occasioned no pain.

"How far she was sensible to the presence of surrounding objects, it is very difficult to determine; indeed, facts seem to prove that she was not, in every paroxysm, alike in this respect. In the early stage of her complaint, she appeared to take little notice of persons, unless they were connected with her train of thought, and then she regarded those with her only as the representatives of the persons whom she imagined to be present. Nor did the sight or the hearing have any tendency to correct the false impression. Thus, in her first paroxysm, she regarded me as her father, and continued to do so as long as I remained with her; but, in her subsequent fits, this idea was never revived. Her conception of persons was generally made to correspond with the idea of the place in which she conceived herself to be. She was in the habit, when well, of spending her evenings in the room with the children of the family, and it was in their company that she often imagined herself to be during the paroxysm. The questions which were at these times proposed to her to test her powers of vision, were cheerfully and readily answered, because they were questions which it was natural for children to ask; or, at least, she supposed them to proceed from children. Much that she said was also directed to them, though it was evident, at times, her conceptions and perceptions were strangely intermingled. In a paroxysm, soon after the arrival of her father, he asked her a question which she answered by addressing a little boy belonging to the family, who was not then in the room; but his knife which he placed in her hand, she immediately recognised as her father's, and wondered how that came to be in Springfield while he was in Brattleborough. At a later period of her complaint; she appeared to comprehend more of what transpired in her presence, and accordingly she obstinately refused to read cards, or submit to experiments of any kind. These trials she then evidently regarded as so many attempts to impose upon her; and in adopting this conclusion she reasoned with perfect consistency; for if she actually could see as she appeared to—if to her vision, night was converted into day, and darkness into light, while she was unconscious of any thing peculiar to herself, what could be more annoying than to be constantly teased with questions which to her senses were perfectly obvious? If a request were made of her which appeared reasonable, especially if it related to her customary duties, she really did whatever was required.

“There is abundant evidence that she recollected, during a paroxysm, circumstances which occurred in a former attack, though there was no remembrance of them in the interval. A single illustration will suffice, though many more might be given. In a paroxysm, a lady who was present placed in her hand a bead bag which she had never before seen. She examined it, named the colours, and compared them with those of a bag belonging to a lady in the family. The latter bag being presented to her in a subsequent paroxysm, the recollection of the former was restored—she told the colours of the beads, and made the same remarks respecting the comparative value of the two bags that she had done before. I had taken measures to satisfy myself in the interval that she then remembered nothing of the first impression.

“Attempts to rouse her from this state were uniformly unsuccessful. She heard, felt, and saw; but the impressions which she received through the senses had no tendency to waken her. A pailful of cold water was in one instance thrown upon her; she exclaimed, ‘Why do you wish to drown me!’—went to her chamber, changed her dress, and came down again. Large doses of laudanum were sometimes given her with a view to relieve her pain—it appeared to mitigate her sufferings, and she was observed uniformly to wake soon afterwards. Excitements of every kind, and particularly attempts to draw forth her peculiar powers, invariably prolonged the fits, and generally aggravated the pain in the head.

“At the termination of a paroxysm, she sunk into a profound sleep. The frown disappeared from her brow, the respirations again became long and deep, and the attitude was that of a person in undisturbed slumber. She soon began to gape and rub her eyes, and these motions were repeated after short intervals of repose. In the course of fifteen or twenty minutes from the first appearance of these symptoms, she opened her eyes, when recollection was at once restored. She then invariably reverted to the time and place at which the attack commenced, and in no instance, when under my care, manifested any knowledge of the time which had elapsed, or the circumstances which transpired during the interval.

“These paroxysms were very obviously connected with the state of the stomach and digestive organs. Though the appetite was generally good, food often occasioned oppression, and she not unfrequently raised a considerable portion of what she ate. She also had head-ache, acidity of stomach, and most of the symptoms usually termed dyspeptic. These circumstances had not indeed attracted much attention till after the occurrence of the paroxysms; but I then found that they had existed, in a slight degree, for some time, and that lately her sufferings from this source had been very considerably aggravated. Improper food, and other causes affecting the stomach directly, I am confident, in several instances, occasioned an attack. The very first paroxysm occurred a few hours after she had eaten a large quantity of green currants; and two or three times afterwards, a paroxysm was occasioned by medicine which disturbed the stomach.

“During the fit she very often called for food, particularly for apples; but she seldom woke as soon as usual, after having gratified her appetite. At a time when she had invariably one or two paroxysms daily, I gave her an emetic, and afterwards allowed her to take but a small quantity of the simplest food; under this course she had but one slight attack for five days, and she was in every respect much better. The paroxysm which she had in this instance occurred also under circumstances illustrative of the nature of the complaint. It came on in the stage, when she was on the way to Worcester, and was preceded by sickness, to which she is very subject when riding in a close carriage.”

The family in which Jane lived were early convinced from the confidence with which she moved, and the facility with which she always avoided obstacles, that she saw both when her eyes were closed and in the dark, but no experiments were instituted to determine the fact until the evening of the 10th of No-

vember, when it was proposed to ascertain whether she could read with her eyes closed.

“She was seated in a corner of the room, the lights were placed at a distance from her, and so screened as to leave her in almost entire darkness. In this situation she read with ease a great number of cards which were presented to her, some of which were written with a pencil, and so obscurely, that in a faint light no trace could be discerned by common eyes. She told me the date of coins, even when the figures were nearly obliterated. A visitor handed her a letter, with the request that she would read the motto on the seal, which she readily did, although several persons present had been unable to decipher it with the aid of a lamp. The whole of this time the eyes were, to all appearance, perfectly closed.

“The second day after this exhibition of her power, she fell asleep in the morning in the act of procuring water from the pump. This was her first attack in the day time. Soon after, on going out of doors, she observed to her companion, ‘what a beautiful day it is, how bright the sun shines!’ It was in fact quite cloudy. When asked by one of the ladies of the family to thread a needle, she refused, saying, ‘you can do it for yourself.’ Soon after, she went into a neighbouring house, where there was an elderly lady to whom she often rendered this kind of assistance. This lady said, ‘Jane, I am old, and cannot see very well, will you thread my needle for me?’ She immediately complied with the request, and threaded the needle not only at that time, but once or twice afterwards. She awoke from this paroxysm in the afternoon, and was quite distressed to find the fits beginning to affect her in the day time.

“The next morning she fell asleep while I was prescribing for her, and her case having now excited considerable interest, she was visited during that and the following day by probably more than a hundred people. To this circumstance, undoubtedly, is to be attributed the unprecedented length of the paroxysm: for she did not awake till Friday morning, forty-eight hours after the attack. During this time she read a great variety of cards written and presented to her by different individuals, told the time by watches, and wrote short sentences.

“For greater security, a second handkerchief was sometimes placed below the one which she wore constantly over her eyes, but apparently without causing any obstruction to the vision. She also repeated with great propriety and distinctness several pieces of poetry, some of which she had learned in childhood, but had forgotten, and others which she had merely read several years since without having ever committed them to memory. In addition to this she sung several songs, such as ‘Auld Lang Syne’ and ‘Bruce’s Address to his Army,’ with propriety and correctness. Yet she never learned to sing, and never has been known to sing a tune when awake. She was evidently very much exhausted by these efforts, and at times her sufferings were so extreme that she could not be induced to answer any questions.

“On Wednesday, November 20th, I took a large black silk handkerchief, placed between the folds two pieces of cotton batting, and applied it in such a way that the cotton came directly over the eyes, and completely filled the cavity on each side of the nose—the silk was distinctly seen to be in close contact with the skin. Various names were then written on cards, both of persons with whom she was acquainted, and of those who were unknown to her, which she read as soon as they were presented to her. This was done by most of the persons in the room. In reading she always held the paper the right side up, and brought it into the line of vision. The cards were generally placed in her hand for the purpose of attracting her notice, but when her attention was excited she read equally well that which was held before her by another. I do not know that she ever read cards which *she had never seen*, when only the back was presented to her.

“Being desirous, if possible, to prove that the eye was actually closed, I

took two large wads of cotton, and placed them directly on the closed eyelid, and then bound them on with the handkerchief before used. The cotton filled the cavity under the eyebrow, came down to the middle of the cheek, and was in close contact with the nose. The former experiments were then repeated without any difference in the result. She also took a pencil, and, while rocking in her chair, wrote her own name, each word separately, and dotted the i. Her father, who was present, asked her to write his name. 'Shall I write Little Billy or Stiff Billy,' was her reply, imagining that the question was proposed by a little boy of the name of William belonging to the family. She wrote *Stiff Billy*—the two words without connexion, and after writing them both, she went back and dotted the i in each. She then wrote *Springfield* under them, and after observing it a moment, smilingly remarked that she had left out a letter, and inserted the l in the proper place.

"A watch enclosed in a case was handed to her, and she was requested to tell the time—after examining both sides, she opened the case, and then answered the question. Afterwards, but in the same paroxysm, a gentleman present wrote his name in characters so small that no one else could distinguish it at the usual distance from the eye. As soon as the paper was put into her hand, she pronounced the name. It was thought that any attempt to open the eye would be indicated by the contraction of the skin on the forehead, but though she was closely watched, nothing of the kind was observed.

"She also at this time repeated poetry and sung, as before. This she did almost every paroxysm; and though there are some pieces which she must have repeated in this way scores of times, her knowledge of them when she is awake is not in the least improved by the practice. These experiments were performed in the presence of several of the most respectable and intelligent gentlemen in town, and they were all convinced there could be no deception.

"While she was in a paroxysm a few evenings afterwards, the lights were removed from her room, and the windows so secured that no object was discernible. Two books were then presented to her which had been selected for the purpose; she immediately told the titles of both, though one of them was a book which she had never seen before.

"Monday, Nov. 25th, she was removed to my house; but, though she had several paroxysms in the interval, nothing worthy of notice occurred till the 30th. The morning of that day, as she was engaged in her customary employments, she complained suddenly of dizziness, seated herself in a chair, and immediately became insensible. Soon after, she applied a bandage to the eyes, went to her chamber and changed part of her dress. She then came down, and taking a basket which she had purchased the day before, and which was much soiled, remarked that it was dirty, and she would wash it. This operation she performed with as much neatness and despatch as she could have done when awake.

"The room in the front part of the house she had never seen except for a few moments several months since. The shutters were closed, and it was so dark that it was impossible for any one possessing only ordinary powers of vision to distinguish the colours in the carpet. She, however, though her eyes were bandaged, noticed and commented on the various articles of furniture, and pointed out the different colours in the hearth rug. She also took up, and read several cards which were lying on the table. Soon after, observing her with a skein of thread in her hand, I offered to hold it for her to wind. She immediately placed it on my hands, and took hold of the end of the thread in a manner which satisfied me she saw it, and completed the operation as skilfully and readily as if she were awake. Having left the room a moment, I found her on my return with her needle threaded, and hemming a cambric handkerchief. She however soon abandoned her work, and was then asked to read a little while aloud. Bryant's Poems were given to her; she opened the book, and turning to the 'Thanatopsis,' read the whole, (three pages,) and the most of it with great propriety. Something being said about her manner of reading, she observed there were parts of the piece which she did not understand, that

she could read it much better if she understood it. The day before, she had procured several *samples* of calico at the shops, portions of some of which had been washed since the commencement of her paroxysm. On their being spread out before her, she not only told the shop at which she obtained each, and named its price, but compared the part which had been washed with the piece from which it was taken, and when there was any change, pointed out the difference.

"A coloured girl came in and seated herself before her: she was asked if she knew that lady; she smiled, and returned no answer. Some one said, 'She has a beautiful complexion, has she not?'" Jane laughed heartily, and said, 'I should think she was somewhat tanned.'

"At dinner she took her seat at the table as usual, helped herself to bread when it was offered, presented her tumbler for water, and through the whole time, did not, by her manner or actions, betray the least want of sight. After dinner the bandage which she put over her eyes in the morning, and which she had worn ever since, was taken off, and in its place a black silk handkerchief stuffed with cotton was bound on so as to fit accurately to the nose and cheeks. Though extremely reluctant on account of severe pain in the head, she was at length prevailed on to write a part of the 'Snow Storm,' one of the pieces which she is in the habit of repeating when asleep. She finished one stanza of six lines, and part of a second. In writing she followed for a time the ruled lines placed under her paper, but they having been displaced, she proceeded without them, continuing, however, nearly in a straight line. In one or two instances she failed to make a proper division of the poetry into lines, and several times misspelled words which she would not have done had she been awake. Twice she noticed the inaccuracy in the spelling, and corrected it at the time, but when writing the same words afterwards she fell into a similar error. A person standing behind her very carefully interposed a piece of brown paper between her eyes and the paper on which she was writing. Whenever this was done she appeared disturbed, and exclaimed, 'don't, don't.' For some time I watched her narrowly to ascertain whether the bandage was constantly in place, but I could detect no change in its position.

"A watch was presented to her, the face of which was concealed by a piece of brown paper placed between it and the chrystal. Instead of telling the time, she observed, 'Any thing but a paper watch!'

"In the evening, when the room was so dark that nothing but the position of the windows could be discerned by common eyes, a blue fancy handkerchief was placed before her, and she was asked if she did not wish for a beautiful pink handkerchief—she replied, 'I hope I know blue from pink.'

"The next day, during a paroxysm, she went into a dark room and selected from among several letters, having different directions, the one bearing the name which she was requested to find. She was heard to take up one letter after another and examine it, till she came to the one for which she was in search, when she exclaimed, 'Here it is,' and brought it out. She also, with her eyes bandaged, wrote of her own accord two stanzas of poetry on a slate; the lines were straight and parallel.

"One circumstance I have omitted to mention, which is, the power of imitation which she occasionally exhibits. This extends not only to the manner, but to the language and sentiments of the persons whom she personifies: and her performances in this way are so striking, and her conceptions of character so just, that nothing can be more comical.

"This, like her other extraordinary powers, is confined to the somnambulist state—at other times she does not exhibit the slightest trace of it."

Jane's disease being manifestly aggravated by the constant trials of her peculiar powers, she was removed to the hospital in Worcester on the 5th of December, 1833. The following abstract from the record book of this institution exhibits the progress of the case, and confirms the observations relative to her remarkable powers of vision.

“Jane had no paroxysm till the evening of December 6th, the day after her admission. ‘Immediately after falling asleep she began to breathe with difficulty, her mind seemed to labour, and she was uneasy and in perpetual motion. She said nothing till questions were asked her. She told the time of day by a watch, in the dark, with her eyes closed—the fire was not extinguished, and of course it was not entirely dark. Her pulse was 72 in a minute, and without irritation. She answered questions regularly, but with an air of impatience; and said ‘they kept asking her to read, but she would not.’ She declared she would not go to Worcester, and said she was at Mr. Stebbin’s in Springfield. Afterwards she complained she was locked up in the hospital, and did not wish to stay, and that she would not have come here if she had expected to be locked up. One hour and a half after the commencement of the paroxysm, her feet was placed in a bath of the nitro-muriatic acid. In five minutes she became calm, and went into a quiet sleep: in a few minutes more she waked very pleasant.’

“From this time till the 13th, she had from one to three paroxysms daily; in some of which ‘she repeated passages of poetry very sweetly; sung some tunes with correctness; and, with her eyes bandaged, walked about the house, and from room to room, without inconvenience.’ Many of these paroxysms, the Doctor observes, he is now satisfied were occasioned by improper food, particularly by the free use of fruit.

“‘*Dec. 13.* Jane had a more interesting paroxysm than at any time before since her residence in the hospital. In a paroxysm the day previous, she lost a book which she could not afterwards find. Immediately on the access of the paroxysm to day, she went to the sofa, raised the cushion, took up the book, and commenced reading. She read two or three pages to herself. Her eyes were then covered with a white handkerchief folded so as to make eight or ten thicknesses, and the spaces below the bandage filled with strips of black velvet. She then took a book and read audibly, distinctly, and correctly, nearly a page. It was then proposed to her to play backgammon. She said she knew nothing of the game, but consented to learn it. She commenced playing with the assistance of one acquainted with the moves, and acquired a knowledge of the game very rapidly. She handled the men and dice with facility, and counted off the points correctly. Had another paroxysm in the afternoon in which she played a number of games of backgammon, and made such proficiency that, without any assistance, she won the sixth game of Dr. Butler, who is an experienced player. Knowing her to be a novice, he suggested several alterations in her moves—these alterations she declined making, and the result showed the correctness of her judgment. The Doctor, a little mortified at being beaten by a sleeping girl, tried another game, in which she exerted all his skill. At its close she had but three men left on the board, and these so situated that a single move would have cleared the whole. While she was engaged in this game, an apple was taken from a dish, in which there were several varieties, and held before her, but higher than her eyes. On being asked its colour, she raised her head, like a person who wished to see an object a little elevated, and gave a correct answer to the question. In the lucid interval, half an hour after she awoke from the paroxysm, it was proposed to her to play backgammon. She observed she never saw it played, and was wholly ignorant of the game—on trial it was found she could not even set the men.’

“‘*Dec. 15.* Paroxysm rather singular. She is full of mischief like a roguish child—is very pleasant all the while, but will not read. At twilight her eyes were more open than common, but she insisted she could not see. Ate too heartily and felt sickness at stomach.’

“‘*Dec. 16.* Has been different in the paroxysms to-day. She opens her eyes and declares she cannot see, when they are shut. When reading, I placed my fingers on her eyes—she said immediately it was total darkness, and she could not read a word. The fact that her eyes are open in the paroxysms proves that they are less susceptible to light, and of course that her vision is less acute. At

dinner her eyes were open, and all the family supposed her awake; but she declared in the evening she had not the least recollection of dining, of seeing some friends, or of witnessing a catastrophe in the gallery which disturbed the whole family, and in which she was much interested at the time.'

" 'Dec. 18. In the paroxysm this evening her eyes are open, and she appears, in all respects, like a person awake; yet her manner is very different from that which she usually exhibits. She evidently has lost her former acuteness of sight—she protests she can see nothing when blinded, and will not attempt the least thing.'

" 'Dec. 19. During the whole day the appearance was the same as on previous days, excepting her mind was more tranquil, and she was more disposed to melancholy. She once said her head ached, and felt strangely. She appeared very much like a person insane. I gave her a letter about four o'clock, which she read, and remarked that she did not know that her friends expected her to write to them. At nine o'clock she was asked if she had seen a letter from Springfield; she denied that she had, but recollected circumstances which transpired yesterday; and, in this respect, was different from what she usually is during the paroxysm. A stranger would say, you have got an odd or insane girl, but would suspect nothing more. My family disagreed about the time of her coming out of the paroxysm; one thought she was out of it when others thought not.'

" 'Dec. 21. Very well, and wakeful all day, but in the evening had a paroxysm of complete insanity: talked, ran about the house, and refused to take her medicine. When forced to take it she shed tears, and fell into a sort of hysterical sobbing, which lasted some minutes.'

" 'Dec. 24. Had a paroxysm in the evening, in which she played backgammon: at first her eyes were closed, afterwards wide open. She said she could not read a word or see at all when blinded. Lately her face has been less flushed, and her head less painful.'

" 'Dec. 30. In a paroxysm to-day she wrote the following letter to her aunt. She afterwards remembered that she had written a letter, but could not recollect its contents.'

" DEAR AUNT,

"I feel that it is my duty to write to you, and inform you of my situation, as it is a very critical one. I received a letter from father yesterday, saying he had not written to you, and wished me to do so. I thought I would try. Perhaps you will wonder how I came to Worcester Hospital—but it is for my health. As I prize that above every thing else, I was willing to deny myself a great many pleasures only for a few months. I left home last April, and went to Springfield with a young lady of my acquaintance, and liked there so well that I concluded to stay and spend the summer. While there I was attacked with the disorder that has brought me to the hospital. The first attack was in June. It was about ten in the evening—the people called a physician; he thought it was partial derangement, and gave me an emetic that stilled me a little, and I got over it, and the next day was quite well. The people thought it was a very strange disorder, and let it pass off. But I was troubled almost every week with the same disorder, and it soon became something serious. I found I was growing worse every day, and was put under the physician's care. Medicine did not seem to have any effect, and I was still growing worse. In October I was attacked in the day time. It was Tuesday morning, and it continued till Friday morning, when I went into a natural sleep, and awoke up and knew nothing of what had passed. I will not try to give you any description of what I did, as I presume you have read it in the newspapers, as my case was the one referred to, and I think the pieces are not exaggerated in the least.

"Father was sent for when I was in one of my turns, as I do not know what else to call them, and reached Springfield in about 48 hours; and an hour after I came out of it. He expected to take me home with him; but I was taken the

next morning, and continued so most of the time he was in Springfield. He said it was no place for me at home, and there must be something done. They then concluded to bring me here, as people thought if I could be cured anywhere it would be here; and I am happy to say I am much better than I was when I came here. I have been here about a month, and I think I shall be entirely well in two months more, as my turns are not near as often, and no two have been alike. The people of Springfield were so much interested for me, that they offered to pay my board here until I was well; so the night I left Springfield I had a present of forty-eight dollars."

"In the evening of the day on which she wrote the letter she had a very distressing paroxysm, which was followed by a mild form of fever which lasted several days."

"*Jan. 10.* Did not feel well all day yesterday—had confusion of head and flushing of face. At evening she had a paroxysm in which she recollected all that was done in the day; and after the paroxysm all that was done in it. It lasted but half an hour, when she went into a quiet sleep and slept till morning."

"*Jan. 11-13.* Had slight paroxysms in which consciousness was not lost—recollected in the paroxysms what transpired in the interval, and in the interval the circumstances of the paroxysm—is greatly inclined to indulge in eating, and if she eats freely is unusually dull and sleepy afterwards."

"*Jan. 19.* Has had one or two paroxysms since the 13th similar to those last described. In the one to-day she repeated the 'Pilgrim's Fathers' very distinctly and correctly. I had censured her for eating fried cakes and the like between meals; and she kept a fast during the paroxysm to-day, but called for pancakes, which she said might be eaten with impunity on fast-days.' "

During a recent visit to Worcester, Dr. Belden had an opportunity of witnessing the improvement in the health of his patient.

"Her face has lost the flush which it used habitually to wear—the head is now seldom painful, and there is no tenderness at the spot formerly affected, and the natural, healthful temperature of the extremities has been restored. There is still some oppression after eating, especially if she deviates from the regulations which have been prescribed respecting her diet; and any gross violation is almost certain to be followed by a paroxysm. Strong mental emotion too, or any kind of mental or physical excitement, conduces to the same effect; and, sometimes, is of itself sufficient to occasion a fit. In a paroxysm which occurred while I was there, the eyes were open and appeared nearly natural—the pupil was, perhaps, a little more dilated than common. Her manner was hurried—the speech and motions rather quick and abrupt. She appeared to be sensible of every thing which took place around her,—knew me, and answered my questions with propriety and correctness; and, so far as I could discover, had a proper conception of the relations of time and place. A handkerchief having been tied over her eyes she declared she could not see at all—said that it was perfect darkness to her. During the whole time her perceptions appeared to be more quick and vivid than natural. Her remarks, as in the earlier periods of her disease, were often distinguished for a degree of wit and brilliancy peculiar to these occasions. She also, at this time, sung as she formerly did. In the paroxysm she recollected circumstances which transpired a short time before, but did not, the next day, remember what occurred in the fit. The termination of the paroxysm is often less distinct than it formerly was, though the access, I believe, continues to be well marked."

The latest intelligence we have of the case is contained in the following extract of a letter from Dr. Woodward to Dr. Belden.

"Jane's paroxysms have ceased altogether for the last nine days, and she is in good health, excepting a distress after taking food. She has never appeared

so cheerful, and in so good spirits, since her residence with us. During most of last week she did the duty of an assistant in the absence of one of our attendants, and she has done more or less work in the halls every day. During the last paroxysm I applied leeches to her head. She waked during the paroxysm not a little surprised at her new *head ornaments.*"

Such is the history of this remarkable case, which we have presented in all its details, conceiving them as we do to possess extreme interest. We have not considered the question of imposture in the case, entertained by some who are ignorant of physiology and of the records of medicine, because we really entertain no suspicion of deceit. Independent, in this case, of the care with which the facts appear to have been observed, the respectability of the witnesses, the character of the patient, the nature of the facts observed precluding the idea of imposition, and the analogous cases in medical records, there appears to us nothing so unprecedented as to excite our incredulity. Physiology, indeed, clearly points to an excited state of certain portions of the brain, as offering an explanation of most of the remarkable phenomenon of the case.

We placed a handkerchief eight times folded over the eyes of a medical friend, who expressed his disbelief in the possibility of any object being discernible through such an envelope, and to his surprise he could distinguish the position of the windows, and on a subsequent occasion the light of a lamp in the room. Now, the retina and cerebral organs of our friend were in a normal condition, and if in this state he could distinguish the light through so many folds of linen, it seems little extraordinary that an individual whose cerebral organs of vision are in a state of extreme excitement should be capable of distinguishing objects much more distinctly. Light and darkness are but comparative terms. It is familiar to every one that a person on entering a room dimly lighted will pronounce it perfectly dark, and yet in a few minutes be able to distinguish minute objects. Persons long confined in dungeons so dark that the visitor pronounces that no ray of light enters, have after a time been enabled to distinguish objects, and even to watch the movements of minute insects; as of spiders, &c. Nor is the fact less familiar to the physician, that patients labouring under retinitis will complain of the light, and even severely suffer from it in a room which to a healthy eye seems totally dark.

We may call attention also to the extraordinary acuteness of the other senses in certain individuals, as of the sense of hearing and of touch in the blind; and still more so in those labouring under inflammation of the auditory and tactile organs. The case of Caspar Hauser furnishes us also with evidence of an acuteness of some of the senses quite as surprising as occurred in the one under notice. There appears to us, then, nothing incredible in what has excited most surprise in Jane's case, her acuteness of sight, and although we cannot so satisfactorily explain all the other phenomena, this does not afford sufficient ground for disbelief, inasmuch as they are not in opposition to any of the established laws of nature.

There are innumerable other phenomena equally extraordinary and inexplicable, and which no one questions, but which only cease to excite our surprise because of their frequent occurrence—as intermittence in fevers, the perfect regularity of the paroxysms, &c.

XVIII. *Clinical Observations on the Constitutional Origin of the various Forms of Porrigo, commonly known by the names of Scald-head, Tinea, Ring-worm, &c. With Directions for the more Scientific and successful Management of this usually obstinate class of Diseases by a Treatment consisting of an Appropriate Modification of the Principles first particularly promulgated by Mr. Abernethy.* By GEORGE MACILWAIN, Surgeon to the Finsbury Dispensary, St. Arn's Society, and late Surgeon to the city of London Truss Society. London, 1834.

A thin octavo of 83 pages, heavily leaded and amply margined,—a volume which will not call forth from the reader the trite adage of *multum in parvo*. The author inculcates the necessity of a mild diet in the treatment of porrigo; and as every physician called upon to prescribe for the same affection recommends the same thing, no one will be inclined to dispute this point with him. Occasional mild purgatives, keeping the head shaved, and the application to it of weak red precipitate ointment, constitute the sum of the medical, general, and local treatment. In all this there is certainly nothing new; neither do we perceive any thing novel in his views relative to the philosophy of the disease. We have been a little puzzled by some of his passages, of which the following may serve as a specimen. Upon the subject of the varieties of porrigo, all of which he conceives are to be relieved by a similar treatment, he observes—

“Modifications in the treatment are certainly required; these, however, result, not from any difference in the local characters of the complaint, but from the variations which occur in the seat, and in the indications of the general disorder by which they are accompanied, to which may be added those obviously suggested by difference of age, and certain constitutional peculiarities.”

We shall cite another example of carelessness in writing. In regard to the state of the stomach in porrigo, he observes—

“I have not often found it necessary to interfere *medically* with this organ, further than in the correction of voracious appetite, which sometimes exists in such a degree, as greatly to irritate the nervous system. I believe that this would, in many cases, gradually subside under the influence of a rational diet alone; but its relief is much expedited by the administration of small doses of ipecacuanha or antimony—one grain of the former, or two or three grains of the latter, may be given every night with half a grain of calomel and the rhubarb, with great advantage.”

Here the “two or three grains of the latter,” should certainly allude to the ipecacuanha, and not the tartrate of antimony, as expressed. Following the advice of the text might occasion some inconvenience to a child or person with a very feeble stomach.

The following passage deals in those “elementary truisms” for which the author is distinguished. In cases where worms exist in the alimentary canal, he observes, that he trusts to repeated small doses of aloes and calomel.

“I prefer these, because, as it appears to me, I not only produce the discharge of these animals with certainty, but they do not so readily again make their appearance. We know but little about these animals; but could we discover it, the object in treating them is evidently not only to procure their expulsion, but to correct, at the same time, the morbid condition which favours their production, and on which it may possibly depend.”

Mr. Macilwain's little book is, however, by no means a bad one. The practice it inculcates is not only simple and safe, but calculated to be efficacious. He deserves special commendation for one thing, namely, dispensing with the

farrago of ointments and washes usually recommended in the treatment of the forms of porrigo, some of which are exceedingly dirty and disgusting, especially such as contain tar and sulphur. That many of the local applications often recommended are not only useless, but positively injurious, we fully believe, being in general too irritating and unsparingly used. The applications or treatment should never be such as would interfere with the healthy functions or conditions of the parts affected, and we fully concur with the author in the opinion, that unnecessary rudeness of manipulation, either in washing, shaving, or drying the head, will each contribute to render the disease more or less obstinate. The following advice upon this subject is highly judicious.

“The head having been shaved as close as the nature of the case may admit, should be washed with soap and water, until every particle of discharge be removed. The soap should next be entirely washed off by a liberal use of clean tepid water, and the whole surface patted, (not rubbed,) with soft linen until perfectly dry. I generally direct the head to be shaved about twice a week.”

The ointment employed, which is generally the red precipitate, made at first of the strength of a drachm to an ounce of lard, and gradually increased, should be applied by means of a moderate sized camel-hair brush—

“With such an instrument the whole of the affected surface should be, as it were, lightly painted; the ointment having been previously conveniently softened by warmth, so that the diseased parts should appear as if lightly oiled by the application, and nothing more. The dressing should be repeated night and morning, with the same care to cleanse the surface of all matters, including the ointment previously employed. In some instances this frequent dressing seems to produce irritation; when repeating it once in twenty-four hours may be sufficient, especially if the renewal of the discharge be not very rapid or abundant.”

We have indulged in a freer notice of this little treatise, from the belief that it will not be republished in this country. G. E.

XIX. *Sul Commercio Sanguigno tra la Madre et il feto Lezione di* TOMMASO BIANCINI, Prosettore e Ripetitore di notomia umana nell' I. E. R. Univer. di Pisa, &c. detta all' Accademia Medico-Fisica Fiorentina Nell' adunanza del di 9 Dicembre, 1827. Pisa, 1833. 8vo. pp. 78.

On the Sanguineous Connexion between the Mother and Fœtus. By THOMAS BIANCINI, of Pisa, read before the Medico-Physical Academy of Florence at its Session of December 9th, 1827.

The mode in which the communication is effected between the blood of the mother and that of the fœtus, has given rise to very considerable controversy among the older writers on physiology. Although, even at the present day, our views in relation to the subject are so very imperfect and confused as to amount to almost entire ignorance; yet of late years it has elicited comparatively little attention. It still, therefore, remains one of those points in physiology, upon which the labours of the industrious investigator are calculated to throw much and important light.

The latest publication in relation to this subject, is the one now before us. It consists chiefly of the detail of various experiments undertaken with the view of determining the structure of the placenta, and the mode in which the blood

is conveyed from the pregnant uterus to the fœtus, and from the latter back again into the vessels of the mother.

We cannot certainly subscribe to all the views which the author has thrown out in the course of his remarks, a few of which do not appear to us to be clearly proved by the result of his experiments. The work is nevertheless highly interesting, and deserving of a careful and candid perusal.

From his experiments, twenty-four in number, M. Biancini conceives the following conclusions to be legitimately deducible.

1. The umbilical arteries communicate with the veins of the maternal uterus.

2. The communication between these two sets of vessels is effected by means of an intermediate series of large, straight vessels, to which, as they accompany the *utero-placental* arteries, and fulfil the office of transporting the blood, returned from the fœtus and placenta, to the vessels of the maternal uterus, the distinctive name of *placento-uterine veins* may with propriety be applied.

3. The placento-uterine veins are not to be considered as prolongations of those of the uterus; they are, in fact, a new formation resulting from the act of impregnation.

4. The umbilical arteries being continued into the placento-uterine veins, establish a direct communication between the venous blood of the fœtus and that of the uterus of the mother; while the utero-placental arteries, inosculating with the radicles of the umbilical vein, cause a similar communication between the arterial blood of the two.

5. The proper substance of the placenta is composed of ramifications of blood-vessels and a reticulated tissue, and is made up of the ultimate divisions and terminations of the vessels which unite the mother with the fœtus, and vice versa.

6. In the placenta there exists two circulations of blood; one, namely, of the blood proper to its own tissue, and another, of the blood destined for the nourishment of the fœtus. There is no difference, however, between these two portions of blood.

7. The arterial blood supplied from the vessels of the mother is conveyed to the placenta by the *utero-placental arteries*, which anastomose with the radicles of the umbilical vein; which latter performs the office of an artery.

8. One portion of the maternal blood is distributed to the proper tissue of the placenta, by means of the collateral ramifications of the utero-placental arteries and umbilical vein, and another is conveyed into the body of the fœtus by the principal trunk of the latter vessel. The blood, after being circulated through the fœtus, is returned back again to the placenta by the two umbilical arteries which perform the office of veins.

9. The blood, finally, returned from the fœtus, mixed with the blood returned from the placenta by branches of the umbilical arteries and the placento-uterine veins, passes immediately into the veins of the maternal uterus, through the principal trunks of the placento-uterine vessels.

The foregoing views require no comment. The several points in which they differ from the generally received opinions of modern physiologists will be perceived at once by our readers, all of whom are to be presumed conversant with the latter. The truth or falsity of M. Biancini's propositions can be determined only by a series of judicious and cautious experiments.

D. F. C.

QUARTERLY PERISCOPE.

FOREIGN INTELLIGENCE.

ANATOMY.

1. *Case of Diverticulum of the Œsophagus.*—A merchant, æt. 54, during a meal, perceived that a mouthful of food, instead of passing on to the stomach, was arrested at a point in the œsophagus. From this time forward he experienced a sensation of pain whenever deglutition was attempted. The affection went on increasing, until the pain experienced after each repast was excruciating; and he was obliged in order to swallow his food, to cause it to regurgitate, and then rechew it, so that he might be said to have become in a degree a ruminant; a sound introduced into the œsophagus indicated the existence of an obstacle in this tube, which it was impossible to overcome. Although the patient swallowed a large quantity of food daily, but a small portion of it passed into the stomach, the rest being rejected after each repast; a large tumour appeared on each side of the larynx, which could be emptied by pressure, their contents being discharged partly into the œsophagus, and partly into the stomach. After nine years of suffering the patient at length died, his death being caused absolutely by hunger and debility.

Autopsy.—Upon dissection the cause of the symptoms manifested during life, was found to be a large pouch or diverticulum, which started from the œsophagus just below the transverse fibres of the inferior constrictor muscle of the pharynx. The orifice of the diverticulum did not equal in diameter the cavity of the œsophagus, but suddenly enlarging, terminated in a pouch three inches nine lines in length; one inch and three fourths in breadth, and about the size of a child's fist. The upper portion of the sac reached as high up as the middle of the thyroid cartilage, whilst the inferior portion extended as low down as the fourth ring of the trachea. The parietes of the sac were of some thickness, and composed of three distinct layers. The external one was cellular, and covered over with well-developed muscular fibres, which passed from the œsophagus to the diverticulum; the second, (mucous,) was thicker than the mucous membrane of the œsophagus and pharynx, and the third was formed by a continuation of the epithelium of the œsophagus. The sac when filled with food, was pushed forward upon the œsophagus, which it closed completely; the resistance offered by the cervical vertebræ to its dilatation posteriorly, being the chief agent in the production of this state of things. It was this which caused his death.—*Gaz. Med. Sept. 28th, 1833, from Rust's Mag. Vol. XXIX.*

2. *Case of Epispidia.* By Dr. CRAMER.—In the autumn of 1828, during the levy of troops in Wesensee, I had an opportunity of examining a young man of 21, who had a remarkable malformation of the urinary organs. The urethra did not lie in its usual place beneath, but above, the corpus spongiosum, and was divided in its whole length from the arch of the pubes to its extremity: the

penis was of the natural length. The mons veneris was wanting, but in its stead there was a reddish skin, covered with a scaly cuticle, and destitute of hair. Beneath the pubal arch there was an opening, into which a finger might be readily introduced, so as to reach the isthmus. The glans was also divided, and the rudiments of a prepuce were observable about its root. When the margins of the fissure were brought together by pressing them on both sides, they were found to coincide pretty exactly. There was nothing apparently amiss with the scrotum and testes: and the animal passions were energetic, though the young man denied that he had ever had any sexual intercourse. His parents were healthy people, and none of his brothers or sisters ever had any deformity that he was aware of. It should be added, that this person laboured under incontinence of urine; and for the greater convenience of emptying the bladder, was in the habit of generally wearing a petticoat instead of breeches. Does not malformation of this kind belong to the hare-lip and cloven-palate species; and might it not be cured by similar means?—*Med. Gaz. from Hecker's Medicinische Zeitung.*

3. *Congenital Malformation of the Brain.*—M. DESCHAMPS communicated to the Royal Academy of Sciences at their meeting of 2d September last, a description of a case of this kind, different from any hitherto described. The subject of it was a man forty-three years of age, who died in one of the Parisian hospitals in consequence of an injury. The brain presented, 1st, a prolongation of the fissure of Sylvius to the superior face of the left hemisphere; 2d, two accidental distinct openings, around which the cerebral convolutions were folded, openings which established a communication between the periphery of the brain and the central parts; 3d, a trifid lobular division at the face of the upper hemispheres.—*Archives Générales, Sept. 1833.*

4. *Displacement of the Orifice of the Urethra in a Young Girl.*—Dr. OTTO has met with a curious instance of this in a girl labouring under typhus fever, and in whom paralysis of the bladder supervened. Upon attempting to introduce a catheter to evacuate the urine, although the fossa which usually leads to the orifice of the urethra existed, no orifice could be there detected. On further search the orifice was found at the inferior and interior part of the left labia pudendi.—*Heidelberger Klin. Ann.*

PHYSIOLOGY.

5. *Sympathy between the Uterus and Mammæ.*—The *London Medical Gazette* for March last, contains some observations by Dr. RIGBY on this subject, which are peculiarly interesting from the practical advantage to be derived from the play of this sympathy in the suppression of uterine hæmorrhage. There is, perhaps, remarks Dr. R. “nothing more interesting, or more worthy the attention of an accoucheur, than the various sympathies which show themselves between the uterus and other parts of the system. The morning sickness of early pregnancy; the convulsions in the latter months, or during labour; the violent rigors when the os uteri becomes fully dilated, or immediately after the birth of the child; the contraction of the uterus when the face is sprinkled with cold water, or after a draught of any cold fluid; are some of the most remarkable, among a considerable number, which occur before and during labour.

“The connexion, in the unimpregnated state, between the uterus and stomach is well displayed by the gastric derangement which frequently accompanies prolapsus uteri, and *vice versâ*. The pain and swelling of the mammary gland from menstrual irritation, or where there is subacute or chronic inflammation, or organic disease of the uterus, in like manner demonstrate the link between this organ and the breast. But the most striking instance of sympathy which I have

remarked between these two organs, is the sudden and powerful contraction which is excited in the uterus, when in a state of inertia, by applying the child to the breast.

“My attention was first drawn to this subject by an observation which I met with some years ago in Carus’s *Gynäkologie*, recommending the application of the child to the breast to promote expulsion of the placenta where it was slow in coming away; but I was far from being aware of the extent to which this sympathy really existed. In cases where there has been considerable disposition to hæmorrhage after labour, from non-contracted uterus, and where I have been afraid to leave the patient, lest flooding should come on in my absence, I have been for the last two years in the habit of ordering the child to be put to the breast as soon as her clothes, &c. were changed, and herself comfortably settled in bed, feeling that I thus diminished the chances there might be of any hæmorrhage occurring. It was not, however, till last year that I began to see the practical importance of this sympathetic connexion between the breast and uterus in its full extent. Having had two or three cases of severe hæmorrhage after labour, from uterine inertia, which had to a degree resisted all the common modes of treatment, and where permanent contraction could not be induced even by repeated injections of cold water and vinegar into the vagina, I determined to see what effect the application of the child to the breast would have upon the relaxed uterus, and was agreeably surprised to find the observation of Professor Carus confirmed in its fullest extent, firm and permanent contraction having been immediately produced in every case.”

“When I first began,” Dr. R. adds, “to use this plan of treatment in cases of inertia uteri after delivery, I was frequently startled by finding a sudden gush of blood, accompanied by a forcible discharge of coagula, follow almost instantly the application of the child; but soon satisfied myself, that so far from being a return of the flooding, it was merely the result of the uterus contracting firmly and expelling its contents.

“It is a common saying among nurses, that ‘the child brings after-pains;’ that is, when the child is first applied to the breast on the second or third day, as was formerly the custom, it was frequently followed by pretty smart after-pains which evidently resulted from the uterus being excited to contract and expel any coagula of blood which might be lodging in its cavity or sinuses. Hence, besides its beneficial effects in preventing any danger from hæmorrhage, the early application of the child to the breast is a valuable means of preventing much of that uterine pain and irritation which is apt to result from the presence of coagula, &c. in the womb, after labour.

6. *Case of Vagitus Uterinus, before and after the Rupture of the Membranes.* By Dr. HEYFELDER.—Whether it is possible for a child in the womb to breathe and cry, is a question which has been variously mooted by medical men, but has never till now been set at rest. I confess I used always to think that the cases we have on record of vagitus uterinus previous to the rupture of the membranes, were all fabulous; for it is quite unaccountable how, under such circumstances, the air necessary for breathing and crying can reach the fœtus. This day however, (the 23d of September, 1833,) my scepticism has been completely removed by the following case:—

The wife of a dyer, of the name of Holdevied, living in Gorheim, near Seigmaringen, a stout, well-made, healthy young woman, aged 24, was in labour of her first child. The pains had lasted for 48 hours. On examination I found the abdomen regularly and firmly distended; the extremities of the fœtus were perceptible above the navel, towards the pit of the stomach; the orifice of the uterus was open to the extent of three inches, but the membranes were neither protruded in the intervals of, nor during the pains, which were not strong nor frequent. Immediately behind the membranes, however, lay the face of the child, in which, with my finger, I could distinguish the eyelids, the nose, and the mouth. So little liquor amnii was there present, that I at first thought there

was nothing between my finger and the features of the infant, and that the membranes must have been ruptured previously to my arrival; but upon further examining the lips, I found the presence of a foreign membrane, which prevented the entrance of my finger into the mouth: and I should add, that the mouth itself, as well as the other parts of the face, lay between the upper and middle apertures of the pelvis.

While making this observation, and particularly at the moment of touching the lips, I suddenly heard a noise—it was the cry as of a new-born child beginning to respire. All who were present, the midwife, the husband, and the patient herself, heard it as well as I did, and testified their great surprise. This occurred in the short interval between two pains. I now considered it adviseable to rupture the membranes, and did so, with proper precaution, immediately over the mouth of the child: *some* water was discharged, and the same cry which was already heard was repeated, but it was much more distinct, and continued longer than before. We heard it also soon after, for the third time, and not less clearly. The forceps were presently applied, and I succeeded, not without some little difficulty, in bringing into the world a pretty strong living infant.

Such a presentation as that in the foregoing case,—the parietes of the uterus not covering nor compressing the child's mouth,—must be peculiarly favourable for the occurrence of vagitus uterinus—at least *after* the rupture of the membranes. And it would seem that such a phenomenon can only occur where the pains are weak, and the contractions of the uterus not considerable. But I shall not enter into any hypothesis to account for the occurrence of vagitus *before* the rupture of the membranes: I would only say, that it seems to be analogous to the chirping of the chick in the egg, first noticed by Mende, and too often attested since to be now gainsaid. And might not the deficiency of water between the membranes and the child's face, together with the peculiar presentation of the latter, have materially favoured the vagitus in the case just related.—*Med. Gaz. from Medicinische Zeitung. of Berlin.*

7. *Memoir upon the Structure of the Lymphatic Vessels.* Read at the Medical Society of Emulation of Paris, at its Meeting on the 2d of October, 1833. By Professor MOJON.—Dr. M. former Professor of Anatomy and Physiology at the Royal University of Genoa, has lately made some new observations upon the structure of the lymphatic vessels, which appear to be well worthy of the interest of physiologists. Having placed the lymphatic vessels upon a glass plate, and opened them through their entire length, Dr. M. has recognised, by the aid of the microscope, that which anatomists regard as valves or folds of their internal membrane, are in fact true sphincters. These sphincters are formed by circular fibres, which, diminishing at different points, the calibre of the lymphatic tube give rise to those nudosities which are remarked at their exterior. The contractions are still more visible when the lymphatics are injected with some liquid. They may also be observed very distinctly when this system is in an almost varicose state, as in subjects who have died with anasarca.

If the two ends of a varicose lymphatic be drawn in a contrary direction, these external nudosities disappear entirely, as well as the pretended internal valves.

Professor Mojon has observed, besides, that the fibrous membrane of the lymphatics, of which Mascagni has spoken with sufficient exactness, has longitudinal filaments from one contraction to another, much more numerous than the oblique. This crossing of the fibres forms a tissue like a kind of lattice.

The longitudinal fibres have their two ends attached to the transverse, which constitute, according to the views of the Genoese anatomist, the sphincters or contractors of the lymphatics. Thus the longitudinal fibres in contracting, draw one sphincter nearer to another, whilst the oblique fibres diminish the diameter. All these fibres, taking their point of support upon the circular fibres, dilate the superior sphincters by drawing the circumference downwards. By means of this physico-vital mechanism, the fluid which penetrates a lymphatic

tic, irritates the portion of the vessel which it fills, which contracting upon itself, diminishes its cavity, and the fluid there contained is obliged to advance by thus successively traversing the open sphincter. This peristaltic motion is performed in the same manner as that of the intestines. This vermicular movement may be observed very distinctly in the lacteal vessels of the mesentery of animals, which are opened two or three hours after they have been well fed.

By admitting this organization of the lymphatics, the retrograde movement of the fluids contained in the absorbent system, admitted by Darwin and others, may be explained, which would be incompatible with a valvular apparatus.

If this system of vessels were valvular, why, says Dr. Mojon, when a lymphatic is opened in its whole length, does it never present but two parallel crescents from one space to another, one to the right, the other to the left, and never one and two halves? That, indeed, would happen often, if these crescents were true valves, like those of the veins.

The difficulty which is often met with in attempting to inject the lymphatic vessels in a contrary direction to the fluid, which passes through them, is owing to this; that the little pouches formed by the sphincters, and the relaxation of their parietes in filling them with the injecting matter, inflate them, and by that means close the opening of the lymphatic.

The observation several times repeated, that the different coloured fluids with which the lymphatic vessels are injected, never spread themselves either in the cellular tissue, or in the parenchyma of the viscera, unless by some laceration, induced M. Mojon to believe that these vessels had no patulous orifice, and that they took their origin from a cellular filament, which progressively became a villosity, an areolar spongiole, a capillary, and at length a lymphatic trunk. He also believes that the absorbent action of this system of vessels is performed by a kind of imbibition through the porosity of their most delicate branches, like a sponge. When once the liquid has penetrated by this kind of endosmose into the cavity of the smallest branches of the lymphatics, it advances into the larger trunks by a progressive and continued peristaltic motion up to the absorbent system.

Several French anatomists have lately repeated these experiments; they have obtained the same results.—*Journal de la Societe des Sciences Physiques et Chimiques*, Nov. 1833.

8. *Contraction of the Uterus after Death*.—Dr. TRUSTEDT relates in *Hecker's Journal*, the following case of this. “A woman who was under the care of Dr. Rudolphi died suddenly, at an advanced period of pregnancy, in consequence of an attack of febris intermittens apoplectica. Her death took place about four o'clock, P. M.; in an hour after which, she was removed from the bed and placed on some straw on the floor, covered with a sheet. A woman left in the room to watch the corpse, was, about midnight, greatly alarmed by hearing a noise proceeding from the part of the room where the body lay, and immediately alarmed the house, being persuaded that the deceased was coming to life. On examination, a full-grown dead child was found between the legs of the mother.”—*Dublin Medical Journal*.

PATHOLOGY.

9. *On the Pathology of Typhus Fever*. By Professor BOUILLAUD.—It results, says M. Bouillaud, from the thirty-six cases of typhoid entero-mesenteritis, which were lately treated in the wards of the La Charité, that the inflammatory affection of the lower part of the small intestines, and especially of the clusters of the glandulæ Peyer, constitutes really and truly the fundamental and essential element of the disease. In every instance, from the very commencement

of the morbid phenomena, the local symptoms have clearly indicated the existence of such a phlegmasia; and the typhoid state has been developed under the influence of the entero-mesenteritis, in the same manner as we see it supervene in certain cases of severe phlegmonous erysipelas, of phlebitis, &c. It would not be more reasonable to consider inflammation of the intestinal follicles and of the mesenteric glands as a simple consecutive effect of the typhoid state, than it would be to regard a phlegmonous erysipelas, in the course of which, typhoid symptoms were developed, as the result of these very symptoms. Such a doctrine would be, in truth, a "contre-sens," pathogenesis. We do not, indeed, deny that erysipelas may occur in subjects already labouring under typhus fever; all that we contend for is, that the obverse case, viz. where the erysipelas is formed before the explosion of the typhoid symptoms, is by no means uncommon, and the scope of our reasoning is obvious when we assert, that the entero-mesenteric phlegmasia is of an erysipelatous character. To those who gainsay our doctrines, we confidently challenge them to adduce a single well-recorded and well-authenticated case of acute inflammation of Peyer's, and of the mesenteric glands, which did not exhibit in its march and in its symptoms, local as well as constitutional, a most close analogy, if not a complete identity, with that disease, which has been most unfortunately designated by the appellations of fever, typhoid affection, &c. If it be true, as the Father of Medicine has predicated, that "*naturam morborum ostendit curatio*," another very potent argument may be adduced in favour of our pathological tenets, from the success of the remedial measures we adopt. These are eminently antiphlogistic. It may be said that some of the means, as the quinine and the chlorurets, (which were used in a few of the cases in the hospital,) are very far from being so; but who does not perceive that, at the period when we had recourse to these, the inflammatory affection had assumed what the ancients denominated a malignant, or rather a putrid character, and, therefore, required for its arrest the intervention of certain measures, superadded to those of a strictly antiphlogistic tendency? In the period of the malady to which we are referring at present, there is indubitably a focus of putrid decomposition, which, reacting on the whole economy, induces great and important changes in the mass of the blood and other fluids, and to counteract the effects of which, a new and paramount indication arises—an indication which is best fulfilled by the use of the chlorurets, both externally and internally, and of certain tonics, especially quinine.

How agreeable it is to find out that the doctrines which we have taught and inculcated for so many years, are in accordance with the experience of some of the greatest men who have gone before us. The illustrious Sydenham, whose authority is so often misapplied and abused in the present day, has admirably pointed out the relations between the phenomena of malignancy or putridity, and certain sorts or shades of inflammatory action:—"Cujus de malignitate opinionis inventio, humano generi longe ipsa pyrrhi-pulveris inventione lætalius fuit. Cum enim hæ febres præsertim malignæ dicantur, in quibus intensioris præ cæteris inflammationis gradus conspicitur." The following case will illustrate my treatment of typhus gravior.

A man was brought to the hospital in the second week of typhus fever, and of such an aggravated character were all the symptoms, that we quite despaired of saving him. The prostration was extreme—the tongue, lips, and teeth covered with a black crust—breath very fetid—respiration exceedingly feeble—pulse minute, and very rapid—abdomen distended—slight diarrhœa—surface of the belly and chest exhibited several reddish patches and papulæ, (eruption typhoide.) The state of this patient positively forbade the employment of any depletory measures, and the only judicious indication seemed to be, to obviate the putrid symptoms by the use of the chlorurets in drinks, baths, and enemas. In three or four days there was a sensible amendment; a blister was applied on the calf of each leg, and ten grains of the sulphate of quinine sprinkled every

day on the excoriated surfaces. The diet was gradually rendered more nourishing, and consisted of broths, soups, fruits, and weak wine and water. This patient ultimately recovered.

Let the preceding case satisfy my opponents, that the same treatment is not uniformly, and to the same extent, followed, in my treatment of fever, without regard to the character of the symptoms, or to the constitution of the patient. By a judicious combination of antiphlogistic and antiseptic remedies, thirty-three cases out of thirty-six, admitted into our wards, were saved. Such success could not rationally be expected to result from a therapeutics, which inculcated the use of stimulants, purgatives, and emetics. At the commencement, indeed, of the malady, a purgative or an emetic may be administered with advantage; but if they be of drastic severity, or are frequently repeated, the enteritic evil must necessarily be much aggravated. What confirms me in this opinion is, that I know that M. Trousseau has lately abandoned the practice of giving frequent doses of Glauber's salt in dothinenteritis, [the entero-mesenteritis typhoide,] as recommended by his master, M. Bretonneau. At present he appears to be satisfied with the "medicine expectante;" for he gives nothing else but the white oxide of antimony, a substance very nearly quite inert; and yet he assures us, that his success of late has been very great in the treatment of cases of genuine typhus. No doubt much good may arise from merely abstaining from every thing positively injurious, and from not interfering with nature's own operations; but we think that even the late M. Dance, who was very sceptical as to the advantages of the common practice in fevers, could not have withstood such practical evidence as we have adduced in favour of the plan which was followed in the thirty-six cases, of which no fewer than thirty-three recovered.—*Journal Hebdomadaire*.

10. M. BOUILLAUD on *Follicular Enteritis*.—The term "follicular enteritis" is to be preferred to the one formerly in use, "gastro-enteritis," on account of its more accurately indicating the nature of the existing lesion; for in many cases there is no inflammation of the stomach, the disease being limited to the mucous membrane, and especially the follicular apparatus of the small intestines; and besides, we see every day examples of genuine gastro-enteritis, unaccompanied with the symptoms of typhus fever. M. Bretonneau has lately introduced the term "dothinenteritis," or furuncular enteritis, and, although we cannot, with strict propriety, admit the furuncular character of the disease of the intestinal glands, the term is not a bad one. Follicular enteritis has the same meaning, and is more simple in its enunciation. The bizarre appellation of "ileo-dicliditis," in allusion to the seat of the disease in the ileum and ileo-cæcal valve, does not at all express the nature of the diseased change, but rather its mere habitat. M. Bouillaud is in the habit of employing the terms of adynamic or putrid entero-mesenteritis, and in order to localize the chief seat of the morbid change, adds occasionally a special, instead of the general prefix, thus, adynamic ileo-mesenteritis, &c.

Eighteen cases occurred in the service of M. B. at the La Charité, during the summer months, and of these, fifteen took place in men, and the remaining three in women. This striking difference is, no doubt, attributable to the more debauched and irregular lives of the former, and also to the circumstance of far more men coming to Paris, from the country or elsewhere, for subsistence; for, indeed, the greater number of the cases we see here, are in those who have resided but a short time in the city. Out of our eighteen patients, eleven had been only four months in Paris—four from six to twelve months—one fifteen, and another twenty months resident there. They were all under twenty-eight years of age. The season of the year, viz. during the months of June, July, and August, is that when the follicular enteritis is usually most frequently seen. It is always a difficult, and often an impossible thing, to trace the exciting cause of fever to any one specific agent or influence; and we shall be generally correct, if we enumerate, not one, but several, such as recent ar-

rival from the country, laborious and excessive work, unwholesome and acrid food, debauchery, exposure to the inclemencies of the weather, depression of spirits, &c.

The premonitory symptoms are, a greater or a less prostration, general uneasiness, anxiety, want of appetite, feeling of coldness over the surface, thirst, head-ache, and in many cases, some degree of purging and nausea, or even vomiting. The head-ache becomes more and more severe, accompanied with noises in the ears, appearance of flashes of light before the eyes, vertigo, stupor, so that questions are answered slowly and with reluctance, and in many cases with delirium. The features are void of animation, except when inflamed during the delirious paroxysm; the eyes become considerably sunk, the nose is sharpened, and the lips are black, and coated with a dark crust. The skin is always hot and dry—the gentlest perspiration is ever a most favourable symptom; for, in all the worst cases, there is a constant aridity of the surface, and only towards the latter stage is it bedewed with an offensive sickening moisture. In some cases, there is an eruption on different parts of the body; this may be either papular, exanthematic, or pustular. A very characteristic symptom of this fever when severe, is the position or decubitus of the patient in bed—he lies in one attitude, seemingly unconscious of all around him, and if he moves, it is rather like the rolling of a senseless mass than the voluntary act of an animate being. Complete coma, convulsions, twitching of the tendons, &c. are always very unfavourable signs. The tongue is generally smooth, dry, and red at the point and along the edges, in the early stage; a filthy, yellow-coloured, cheesy-looking crust covers it, and in the more severe cases, so completely parched is it, that it has the appearance of having been broiled. The lips, teeth, and mouth are invested with a filthy brown or black sordes, and the breath is offensively disgusting. The thirst is always great—sometimes excessive. The gastric irritation is by no means observed in most cases; thus, in our eighteen patients, six only experienced vomitings; and except in one case, there was not any tenderness of the epigastric region when pressed upon. Pressure on the abdomen, especially over the cæcum and ascending colon, produced pain in ten cases. In fourteen, there was well-marked meteorism, or inflation of the bowels; and the degree of this symptom was usually proportionate to the severity of the case. The involuntary discharge of the urine, especially if this be muddy, ammoniacal, and fetid, always prognosticates great danger. The almost uniform coëxistence of pulmonary disease deserves our serious notice; in fifteen of our cases there was acute bronchitis, indicated by a dry sibilant, or mucous sibilant râle; in two, severe cynanche existed, and in one a double pneumonia, which caused the death of the patient. The biliary apparatus was not much affected in the majority of the cases. Four of the patients died, and the following are the most striking necroscopic appearances found.

Serosity under the membranes of the brain; substance of the brain more highly injected than usual; consistence nearly normal. The stomach, in all cases, presented at one or more points arborizations of minute vascularity; the texture of the mucous lining was generally softened, and thinner than in health. The duodenum was but little affected. On examining the ileum, there were found, sometimes even from its very commencement, patches of distinct eruption, or of an intense vascularity, with intermediate portions of healthy surface; but these phenomena were always more distinct as we approached its lower or cæcal extremity; at first, or highest up, the glandulæ Peyerî and aggregated follicles were merely swollen and enlarged; then here and there they were found to be ulcerated, the little ulcers having thickened edges, and the subjacent cellular tissue being denuded; as we proceeded lower down, the glandulæ Peyerî became more developed, and around them, the single or isolated follicles were converted into aphthous-like ulcerations, with red, and even bloody borders; towards the extremity of the ileum, the gut was found to be actually riddled with these ulcerations, which were surrounded with the soft, pulpy, and inflamed mucous membrane. In one case, the surface of the ileo-cæcal valve,

and also of the cæcum, exhibited these last described appearances. The mesenteric glands, adjoining to the diseased portions of intestine, were red, hypertrophied, and softened. Most of the other viscera, as the liver, spleen, heart, &c. presented more or less ramollissement of texture, so that they were easily crushed between the fingers.

As to the *treatment*, it was in all cases of an antiphlogistic tendency—moderate, but not repeated venesection; the application of leeches upon the epigastric and cæcal regions, (the *average* number required for each patient was between sixty and seventy in all, or about sixteen at four different times;) in four cases, cupping was employed to subdue the bronchitic affection. In nine of the cases, blisters were used, sometimes to the thighs, at other times to the calves of the legs. In ten cases, the solutions of the chlorides, (which were first recommended in 1826, by M. Bouillaud, as valuable remedies against the intestinal disease, and the consecutive alteration of the mass of the blood,) were employed, either by the mouth, or in injections, or lastly, mixed with poultices, and applied to the abdomen. The bed-clothes also, of the patients were freely sprinkled with them.—*Med. Chirurg. Rev. and Journal Hebdomadaire*.

11. *On Chronic Gastritis*.* [Extracted from Dr. STOKES' Clinical Lectures.]—Chronic gastritis is an extremely interesting disease, whether we look upon it with reference to its importance, its frequency, or its Protean character. It is commonly called dyspepsia, and this term, loose and unlimited in its acceptance, often proves a stumbling block to the student in medicine. Dyspepsia, you know, means difficult digestion, a circumstance which may depend on many causes, but perhaps on none more frequently than upon chronic gastritis. In the great majority of dyspeptic cases, the exciting cause has been over-stimulation of the stomach, either from the constant excess in strong, highly-seasoned meats, or indulging in the use of exciting liquors. Persons, who feed grossly and drink deeply, are generally the subjects of dyspepsia; by constantly stimulating the stomach they produce an inflammatory condition of that organ. Long-continued functional lesion will eventually produce more or less organic disease; and you will find, that in most cases of old dyspepsia there is more or less gastritis. But let us go further, and inquire whether those views are borne out by the ordinary treatment of dyspeptic cases. When you open a book on the practice of physic, and turn to the article dyspepsia, one of the first things which strikes you is the vast number of cures for indigestion. The more incurable a disease is, and the less we know of its treatment, the more numerous is the list of remedies, and the more empirical is its treatment. Now, the circumstance of having a great variety of "*cures*" for a disease, is a strong proof, either that there is no real remedy for it, or that its nature is very little understood. A patient afflicted with dyspepsia will generally run through a variety of treatment, he will be ordered bark by one practitioner, mercury by another, purgatives by a third, in fact, he will be subjected to every form of treatment. Now, all this is proof positive that the disease is not sufficiently understood. What does pathology teach in such cases? In almost every instance where patients have died with symptoms of dyspepsia, pathological anatomy proves the stomach to be in a state of demonstrable disease. It appears, therefore, that, whether we look to the uncertainty and vacillations of treatment, or the results of anatomical examination, the case is still the same; and that, where dyspepsia has been of considerable duration, the chance is that there is more or less of organic disease, and that, if we prescribe for dyspepsia neglecting this, we are very likely to do mischief. I do not wish you to believe that every case of dyspepsia is a case of gastritis. This opinion has brought disgrace on the school of Broussais. His disciples went too far, for whether the gastric derangement depended on nervous irritation, or anæmia, or disease of the liver, or mental emotion, they prescribed leeches and water diet, and thus very often brought on the disease they

* For the treatment, see department of Practice of Medicine.

sought to cure. We may have functional disease, independent of structural lesion in the stomach, as well as in any other organ; it is no unusual circumstance, and the practical physician meets with it every day. A great deal of confusion, however, arises from the similarity of the symptoms. I remember an accomplished friend of mine getting into disgrace with one of the members of a board of examiners on this subject. He was asked to tell the difference between the symptoms of chronic gastritis and dyspepsia, and in reply stated that he could not. For this he was nearly rejected, but I believe, on a candid review of the circumstances, you will agree with me, that he knew more of the matter than the learned professor. In ninety-nine cases out of a hundred of chronic gastritis there is no fever, scarcely any thirst, often no fixed local pain, and this leads persons away from an idea of the existence of an inflammatory condition of the stomach. What are the symptoms of a chronic gastritis? pain of occasional occurrence, flatulence, acidity, swelling of the stomach, fœtid eructations, sensation of heat and weight about the epigastrium, and perhaps vomiting. Well, these are also the symptoms of dyspepsia, whether it be accompanied by inflammation or not. How then, when called to a case of this kind, are you to determine the point? I must mention to you here, that it is often hard to do this with certainty. There are two circumstances, however, which you should always bear in mind, as they will afford you considerable assistance in coming to a correct diagnosis; *first, the length of time which the disease has lasted; secondly, the result of the treatment which has been employed.* You will find, that where the disease is a chronic gastritis, that it has been of some duration, that it has come on in an insidious manner, and that it has been exasperated by the ordinary treatment of dyspepsia. Many persons think, that if you give a patient medicine, without regulating his diet or issuing a prohibition against full meals, that you can cure him, and that, as he has no fever, and can go about his usual business, there is no necessity for antiphlogistic regimen. But as the disease goes on, he complains of pain in the stomach during the process of digestion, feels uneasy after dinner, there is an unpleasant degree of fullness about the epigastrium, he also experiences a variety of disagreeable symptoms, sometimes being annoyed with pain in the chest, sometimes he says he feels it in the region of the heart, and sometimes about the cartilages of the eighth and ninth ribs. These symptoms subside after the process of digestion is completed, but during its continuance they harass the patient. Very often relief is obtained by vomiting, and hence some persons are in the habit of throwing up their food for the purpose of relieving themselves, and consequently can have no benefit by it. In some cases digestion goes on until the food seems to reach a particular point, and then an acute feeling of pain is experienced. In these cases the gastritis is generally circumscribed, and is likely to terminate in circumscribed ulceration. Various fluids are rejected from the stomach, during the course of a gastritis; sometimes acid, sometimes alkaline, sometimes insipid and sweet, sometimes bitter and bilious. There is generally a degree of fullness about the stomach, and the epigastrium is tender on pressure, but no decided tumour either of the pylorus, liver, or spleen, although the epigastrium presented that appearance of fullness and tension termed by the French "*renitence*." The bowels, too, are constipated, and this is a matter worthy of your attention, for it sometimes unfortunately happens that the practitioner, mistaking the gastritis for simple constipation, goes on prescribing purgative after purgative, until the patient gets incurable disease of the stomach. I know a case of a lady who gets one stool a week by taking eight drops of croton oil. Some years ago, she was in the enjoyment of excellent health; her bowels happened to get confined, and she was treated by a systematic practitioner with continued purgatives; her bowels are now completely torpid, except when they are subjected to this unnatural stimulus. There are thousands of persons treated in this way, because practitioners look to consequences and not to causes.

There is one remarkable difference between acute and chronic gastritis, which deserves your attentive consideration, as it exemplifies a law applicable

to all viscera under similar circumstances, and this is, that the sympathetic irritations are not so frequent or so distinct in chronic inflammation as in the acute form, and hence, in a case of chronic gastritis, we almost never have fever, and the affections of the nervous respiratory or circulating systems are by no means so well marked. It may even go on to actual disorganization of the stomach, and yet the patient will not complain of any particular symptom during its whole progress, which you could set down as depending exclusively on the sympathetic irritation of gastritis. Some of these cases, called dyspeptic phthisis, by Dr. W. Philip, are most probably examples of the sympathetic irritation of the lungs from chronic gastritis. Another case, respecting which much error prevails, is what has been called hypochondriasis. Persons labouring under these affections are condemned to run the gauntlet of every mode of treatment, sometimes (and fortunately for themselves) they are sent to travel, sometimes they are treated with musk and antispasmodics, then with the mineral acids, then with purgatives and mercurials, and lastly with bark, nitrate of silver, and stimulants. They go about like spectres from one practitioner to another, trying remedy after remedy, alternately sanguine with hope or saddened by disappointment, until at last they die, and, to the astonishment of all the doctors, the only disease found, on dissection, is inflammation and thickening of the mucous surface of the stomach. A condition, which, under these circumstances, it was difficult to say whether it was the original disease, or produced by "*fair trials*" of a number of powerful agents. Hypochondriasis is not always gastritis; but it is now found, that in many cases it commences and terminates with disease in the upper portion of the digestive tube and the assisting viscera. This you must always bear in mind.

Chronic gastritis terminates in various ways. Sometimes the inflammation is limited to a particular spot of the stomach, and here we frequently discover circumscribed ulcerations. In very bad cases these ulcers go on perforating the various coats of the stomach, until at last the contents of that organ escape into the serous cavity of the abdomen, and the patient rapidly sinks under a fatal peritonitis. It does not follow, however, that, in all cases of perforation, the contents of the stomach get into the perineum, causing death. Very often adhesions are formed, and the base of the ulcer is the serous covering of some other portion of the digestive system, or a false passage may be formed into the colon. One of the most common terminations of a chronic gastritis is, that the inflammation extends to other viscera; the patient gets disease of the liver, spleen, peritoneum, or lungs, and sinks under a complication of disorders. It was somewhat in this way that Napoleon died. He laboured for a considerable time under chronic disease of the stomach, which seems to have been overlooked by his medical attendants, and this terminated in the extension of disease to various other organs.—*Lond. Med. and Surg. Journ. Jan. 25th, 1834.*

12. *Spontaneous Perforations of the Œsophagus and Trachea.* By Dr. ALBERS, of Bonn.—These perforations may be arranged under several heads. Under the first may be comprised all those which commence in the pharynx, and finally ulcerate the parietes of the larynx or trachea. Dr. Albers adduces three cases of this description; two from Monro and Sandifort, and one from his own practice. The first symptom, and that which predominates at the commencement of the disease, is an extreme difficulty of deglutition. In one case the patient was obliged to push food into the œsophagus with a small stick; nevertheless it often happens that the ulcerated surface is so sensible, that the introduction of any foreign body whatever, instantly excites spasmodic contractions of the œsophagus, and the instantaneous expulsion of the food by the mouth and nostrils. Angina pharyngea always complicates these ulcerations of the œsophagus. It exists in all cases, and the constancy of this symptom gives it considerable value. At the same time there is excessive secretion of mucus, the patient experiences a continual desire to swallow, and the glands of the neck are singularly tumefied; there is usually no pain, except during the act of

deglutition. All these symptoms appertain to simple ulcerations of the œsophagus; but from the moment that this canal communicates with the trachea by a fistulous opening, there is cough, which daily becomes worse, impeded respiration, &c. The patient soon emaciates; swallowing becomes more and more difficult; the food is rejected with violent coughing, and the patient finally succumbs, often after three or four years, sometimes after a much longer period. In a single case, death occurred at the end of a year and a half.

The second species of ulceration is that which commences in the air-passages, and which perforates the alimentary canal. This is infinitely rarer than the first, and also differs from it in the rapidity of its march, and the violence of its symptoms. Those indicative of an affection of the larynx, give the first alarm. The alteration of voice, cough, and mucous expectoration, are at first moderate, especially when the ulceration is not seated exactly in the vocal organ. But the expectoration soon becomes purulent or bloody, swallowing painful, and subsequently the food is violently rejected the moment they come in contact with the part of the œsophagus corresponding to the part of the trachea which is the seat of disease. By the efforts to cough, purulent matter, striated with blood, and sometimes pure blood is expectorated. During or after these efforts, half-digested substances are vomited up by the patient, whose strength rapidly diminishes, and he dies asphyxiated by food, which finds entrance into the trachea. Baillie positively denies the occurrence of this mode of perforation; nevertheless we find in a dissertation by Dr. Kunze, entitled *De Dysphagiâ Commentatio Pathologica*, 1820, some examples, in which the observation of the symptoms, as well as that of the pathological relations, have proved that the air-passages were the primary seat of the disease.

Finally, there exists a third species of perforation, produced by a tumour of some kind opening both into the trachea and œsophagus. Dr. Albers reports two cases from his own practice of this species. The tumours may be of different natures. Sometimes they consist of new formations of fibrous masses, of cancers, sometimes simple abscesses situated between the œsophagus and trachea. The commencement of tumours of the first species are not ordinarily announced by any very striking symptoms. There is difficulty in swallowing, cough, and all the symptoms of compression of the trachea and œsophagus; but in proportion as the tumour increases, the compression becomes greater, cough and vomiting come on, and the patient perishes from consumption, or by hæmorrhages from the surface of the tumour, which sometimes fill the bronchi and trachea.

Abscesses are seated in the cellular tissue, uniting the œsophagus to the trachea, and they are sometimes developed with great rapidity. The great quantity of pus expectorated is the characteristic symptom of this abscess having opened into the trachea; the anterior symptoms are the same as those from other tumours.—*Rev. Méd. Aug. 1833, from Graefe und Walther's Journal, S. 1. 1833.*

13. *On the Mechanism of the Production of Pulmonary Emphysema, and on some of the Effects of Chronic Bronchial Inflammation.* By DAVID CRAIGIE, M. D.—Ever since the publication of the work of Laennec, in which this variety of lesion received a distinct place and consideration, it has been too much the practice for teachers to represent, and students to regard, pulmonary *emphysema* as a primary lesion, and thereby to overlook entirely its true character, and its anatomico-pathological relations. Every case almost of *dyspnœa*, and almost all cases of what are commonly called *asthma*, have been since that time attributed to *emphysema* of the lungs; while the formation of *emphysema*, and the mechanism of its production have been very much, if not entirely overlooked. I have long and repeatedly had occasion to observe, and to impress on the hospital pupils, the fact, that *emphysema* is one only of many effects of the chronic form of *bronchitis*, and that it is only at a particular stage of the latter affection that the emphysematous distention takes place.

In the early stage, indeed, of *bronchitis*, there is simply a diffuse or spreading inflammation or congestion of the pulmonary mucous membrane, and after it has subsided under proper treatment, that membrane, both where it lines the bronchial tubes and pulmonary vesicles, sooner or later returns to its natural condition; while the calibre of these tubes, and the capacity of the vesicles is little or not at all lessened. Either, however, after repeated attacks, or long continuance of this disease, not only does the inflammatory process extend from the mucous membrane to the submucous or pulmonary filamentous tissue, but by its long endurance it renders the former thick, villous, and brownish-coloured, secreting either much viscid mucus, or mucus more or less tinged with blood, or even occasionally pure blood, and indurates and solidifies the latter by the extravasation of albuminous fluid; while the increased thickness of the membrane, and the swelling of the submucous tissue, encroach so much upon the area of the bronchial tubes and vesicles, as to diminish remarkably the capacity of these cavities.

This swelling, however, of the pulmonary mucous membrane and filamentous tissue is not general over the whole of the tubes, nor even over the whole of one tube, otherwise it would produce fatal *asphyxia*. But it in general takes place at certain spots in the course of the tubes more remarkably than at others, producing a species of stricture of one or more bronchial tubes in one or both lungs. The effect of this again is various, according to its degree, and according to the component systems and textures of the lung most affected. One of the most frequent effects of the presence of one of these constricted portions, especially if the membrane secretes much viscid mucus which requires to be frequently coughed up, is to obstruct the passage so much that expiration becomes either inadequate or is interrupted. As respiration consists, therefore, in alternate inspiration and expiration, if air has been either inhaled by this tube, or by some of the communicating ones, it cannot, during ordinary expiration, be easily expelled. The effect is, that the bronchial membrane and pulmonary vesicles are excited by their physiological properties to frequently repeated expiratory efforts; and as these are inadequate to expel the air from the lungs, the compression of the expiratory muscles necessarily, by forcing the portion of lung into smaller compass, compresses the air already contained in the vesicles beyond the constricted point. The air thus confined, after many repeated expiratory efforts, forces its way, by its own elasticity, through the delicate mucous membrane of the vesicles into the pulmonic filamentous tissue, and, when once there, it continues to spread rapidly in proportion to the obstruction in the bronchial tubes, and the difficulty of producing efficient expiration. It is then that the air contained in these vesicles renders the chest, when struck, preternaturally resonant; while the extreme difficulty of breathing, with the dry sonorous *rhonchus* or sibilism, indicate the laborious struggle which is made in the tubes, contracted by swelling, and obstructed, as they are, by adherent mucus,—to inspire and to expire in an efficient manner.

In this manner, therefore, bronchial inflammation, either by continuance or repeated attacks, tends to produce *emphysema* and its usual phenomena; and there are few cases of emphysematous distention of the pulmonic filamentous tissue which may not be traced to this cause. In the young, when labouring under hooping-cough, in the aged, after frequently repeated attacks of catarrh, and in the middle-aged after the continuance of bronchial inflammation, in a sub-acute or chronic state, *emphysema* is with equal certainty, and in equal perfection, produced. In the first case, indeed, as the bronchial symptoms subside, the tubes become more pervious, and expiration becomes so much freer and less interrupted, that the air ceases to be urged through the vesicular membrane, and that which had been already impelled into the pulmonic filamentous tissue is at length absorbed. But in the two latter instances, in which the thickening of the membrane either abates little, or continues unchanged, the emphysematous distention continues to increase, until it has attained an extent almost incredible to those unaccustomed to examine cases of chronic bronchial disease.

Emphysema, however, is not the only effect of this state of the bronchial tubes. The impracticability of inspiring and expiring completely in such a state of the lungs, which implies the absence of the most essential condition of respiration, viz. the frequent and incessant change of air in the bronchial tubes and vesicles of the lungs, interferes with the necessary changes in the blood of the pulmonary artery and veins, which, therefore, passes from the former vessel into the latter, much less completely aerated than it would be in the healthy state. In addition to this, as the motion of the blood through the pulmonary artery into the pulmonary veins is always more free, in proportion as the expansion of the lung by inspiration, and its collapse by expiration, is extensive; and as both the obstruction of the bronchial tubes by viscid mucus, and the swelled and congested state of the bronchial membrane and submucous tissue, prevent the branches of the artery and veins from freely expanding themselves, the motion of the blood through this order of vessels begins to be interrupted and retarded, and thus to induce a congested state of the whole pulmonary system, which not only adds to the *dyspnœa* and *orthopnœa* of such patients, but eventually terminates in dropsical effusion into the pulmonic filamentous tissue, into the cavity of the *pleura*, and even into the general cellular membrane. The pulmonic filamentous tissue is in general the first seat of this dropsical infiltration; and it is one of the most common changes recognised in inspecting the lungs of persons cut off by long-continued bronchial inflammation.

Chronic bronchial inflammations, further, by its influence in impeding respiration and the circulation of the pulmonary artery and veins, has an indirect tendency to induce disease of the heart. In consequence of the difficulty which the blood encounters in passing through the branches of the pulmonary artery, the trunk of that vessel becomes permanently distended; and the right ventricle, being also distended and incessantly excited to new contractions, becomes affected with hypertrophy, sometimes with dilatation, sometimes without; and in other cases it may be merely enlarged with extenuation of its walls. It is, I conceive, in consequence of the union of the two ventricles in the human subject, that this excessive distention and inordinate action, by being first confined to the right ventricle, gives rise to a similar inordinate action in the left ventricle, that the latter is often found in a state of hypertrophy in persons who have long laboured under chronic bronchial disease. The fact of the connexion is at least well established; and the wards presented few instances of bronchial disease in which the heart was not affected, and in most of the cases of disease of the heart, the bronchial membrane and pulmonic tissue had been previously affected.—*Edin. Med. and Surg. Journ.* Jan. 1834.

14. *Death Caused by the Opening by Ulceration of a Blood-vessel in the Stomach.*—An instance of this has been communicated to the Anatomical Society of Paris by M. MONESTIER. The subject of the case was a man, seventy-eight years of age. On dissection, at the base of an ulcer, situated near the cardiac orifice of the stomach, an open vessel was discovered. A large quantity of coagulated blood was found in the stomach, and through the whole extent of the intestinal canal.—*Archives Générales*, Jan. 1834.

15. *Vaccination.*—Two children were vaccinated by M. BRACHET of Lyons. Ten days afterwards there being no appearance of the development of the vaccine disease, M. B. re-vaccinated these children. The day after this second vaccination, the punctures first made became inflamed, and the disease subsequently went through its regular course. The punctures made in the second vaccination dried and disappeared.—*Rev. Méd.* August, 1833.

16. *Re-Vaccination of the Prussian Army.*—A circular, dated Berlin, March 15th, 1833, signed by — VON WIEBEL, Chief of the Military Medical Staff, declaring that as the results of the re-vaccination of the army, as already affected, fully proves its necessity, it appearing that, in the guards alone, 1425 out of 2641 exhi-

bited the true vaccine pustule, the order, therefore, for re-vaccinating all recruits is made absolute, and the physician-in-chief of every division is required to procure and collect from all the several regimental surgeons, correct lists of all the men who have been re-vaccinated, as well as every circumstance coming under their observation, connected with the small-pox, and to report the same every year, at the end of February, to the Royal Military Council. This is followed by a statement, entitled “*Collection of the reported results of re-vaccinating the army.*” Whereas a number of individuals have been attacked with small-pox, and some have died in consequence, notwithstanding that strongly-marked scars unquestionably proved their having been vaccinated at an early age, it is, nevertheless apparent that, in advanced years, they still are liable to be infected; and that such is likely to be the age at which they can be admitted to military service. Hence, on the representation of this fact, by the chief staff physician, to the commander-in-chief of the army, an order was despatched, on the 26th of March, 1831, to all the medical officers of the army, for the re-vaccination of all the men who may appear to be possibly liable to suffer; as well as all recruits whatsoever, whether they have marks of previous vaccination or not. This order was attended to by the several corps which it reached, as far as could be effected, and with the following results. In the 3d corps of the army, being at Erfurt, in 1831, where the small-pox was raging, the 24th regiment of Infantry, and the Fusileers of the 20th, were re-vaccinated, and, out of 6020 men, 2354 exhibited pustules; among which more than one-eighth proved of the true vaccine character. In the 8th corps, 2784 were vaccinated, and 925 took; among which, also, about one-eighth proved true vaccine.

In 1832, 3942 of the 3d corps were vaccinated, and 1594 exhibited effects; but, as in the rest, somewhat more than one-eighth were true vaccine: in the 5th corps, of 3234 vaccinated, 2535 were affected in the aforesaid proportion. As yet, there are no accounts of the other divisions of the army, to which, however, the order has been sent and executed; the royal military chief being desirous that the whole army shall be placed in safety on this head. There being great doubts of the extent of this prophylactic measure, either from the possible failure of the original vaccination, or from the effect wearing out by time; at all events enough is established to prove the necessity of the measure; and it is notorious that, after the re-vaccination of the doubtful men, and the new recruits of the Fusileer Battalion, at Erfurt, not one became infected, although closely in contact with very many violent cases of the disease. The circular goes on to direct that a constant attention be paid to the re-vaccination of the recruits, and gives some minute military regulations for the purpose, demanding a regular return to be made as before mentioned, after the following manner:—1, name of the regiment; 2, place; 3, name of the men; 4, number; 5, if marked by previous vaccination (*a*) certain (*b*) uncertain (*c*) none; 6, the re-vaccination (*a*) regular effect; number (*b*) irregular, number (*c*) without effect, number; 7, repetition on those which failed, (*a*) with effect (*b*) without; 8, number of pustules going through their course; 9, account of cases occurring during the year, in spite of vaccination, (*a*) varicella (*b*) varioloid (*c*) small-pox; 10, general remarks.—*Lane's Monthly Archives from Rust's Magazin.*

17. *Re-vaccination.*—The question of re-vaccination continues still to occupy much of the attention of physicians of France, not only in the capital, but in all the provincial towns of note. The Academy of Medicine has appointed a committee to examine all the doubtful points connected with the subject, before giving any decided judgment, and, from time to time, various communications are addressed to that body from practitioners residing in the provinces. Amongst the latter, M. LURORT, a physician residing at Bischwiller, has made several experiments, the results of which possess interest. Within a period of four years this physician has practised no less than 3600 vaccinations; and in the year 1832, when an epidemic variola attacked the canton, he had occasion to repeat the operation on several individuals—eighty-six persons of both sexes,

who had all been vaccinated during infancy, presenting themselves for a second vaccination. With the exception of one or two, their arms were marked with the vaccine cicatrix in a perfect form. The following table gives the results of the operation, which was performed by introducing the matter through seven or eight punctures on one arm only:—

			Perfect Eruption.		Incomplete Eruption.		False ditto.
Individuals re-vaccinated below 10 years of age..	12	..	0	..	5	..	7
From 10 to 20	36	..	5	..	12	..	19
From 20 to 30	32	..	5	..	12	..	15
From 30 to 40	6	..	2	..	2	..	2

The first column of this table, (*perfect eruption*,) embraces all the individuals in whom the pustules were developed three or four days after the operation had been performed, assuming the true character of the vaccine pustule, and following the same march, with this sole difference, that the duration of the secondary eruption was sometimes two days less than that of a true primary one. The formation of the pustules was always attended by a secondary fever, and they did not fail to leave a well-marked cicatrix behind them. The second column, (*incomplete vaccine*,) embraces those in whom the punctures were covered with pustules on the second or third day; but these always assumed an irregular form, terminated in a sharp elevated point, were filled with a dirty yellow serum, and faded on the sixth or seventh day, without being attended by fever, or leaving any trace on the arm. It is unnecessary to recur to the third column, as it gives only negative results.

Thus, from the preceding table, it clearly follows, that of eighty-six individuals who were re-vaccinated, twelve presented examples of a second eruption, so normal and perfect, that it was impossible to distinguish it from a true primary vaccine. Perhaps it may be here objected, that the first vaccination was imperfect and ill-done; but M. Lurott affirms, that two-thirds of these patients, at least, presented vaccine cicatrices so deep and well defined, as to leave no doubt of the efficacy of the primary operation, and we are entitled to conclude with him that these individuals exhibited examples of two distinct and perfect eruptions of vacciola.

As to the interval of time which elapsed between the two operations, and the results which follow from this portion of the table, M. Lurott observes, 1st, that before the age of ten years re-vaccination has never, in his hands, produced any thing but a false vaccine; he has never been able to develop a true and complete eruption when the interval between the two operations was so short; 2d, that above the age of ten years re-vaccination has, in a certain number of cases, completely succeeded. The proportion of cases in which the operation gave rise to a second eruption, seems in direct ratio with the interval which elapses between the first and second vaccinations; the longer the interval, the greater the chance of success. Thus, in some cases, the first vaccination which we perform, although perfectly well done, has only a preservative effect of a temporary nature, and is limited to a certain number of years. This seems to be the true solution of the question: but what is that limit? Here our answer cannot be so precise, for it varies according to individual constitution, but from the experiments of M. Lurott, the effect would seem to last for at least ten or twelve years after the first vaccination; but this is a subject which requires a vast number of experiments in different seasons and countries, before we can hope to arrive even at an approximate resolution.

A question proposed by the Academy, and which has not yet been satisfactorily answered, has also been investigated by M. Lurott, though in a limited manner, viz. Will the vaccine matter taken from the pustule of a secondary eruption produce a true primary vacciola? The author answers in the affirmative, on the faith of some experiments, one of which we quote, as it seems very decisive:—

Mademoiselle Bourguignon, nineteen years of age, who had been vaccinated

for the first time at the age of seven months, the traces of which were exceedingly well marked on both arms, was re-vaccinated in November, 1832. On the seventh day after the eruption, the left arm exhibited pustules of a complete eruption, a few drops of matter were extracted from these, and a portion was introduced on the same day into the right arm of a healthy child, four years of age. Six punctures were made. A quantity of virus taken from another child, who had been vaccinated for the first time, was introduced into the left arm of the same infant by an equal number of punctures. The boy, thus vaccinated in both arms, was brought to M. Lurott for examination on the seventh day. The vaccine pustules were equally perfect on both sides, but they were not quite so well developed on the right arm. The progress of the eruption, for both was exactly the same, and the cicatrices which remained, were as deep on one arm as on the other. The virus collected separately from both sets of pustules was afterwards inoculated into different individuals, and gave similar results.

From this and several other facts, which we may have occasion hereafter to lay before our readers, we are entitled to conclude that re-vaccination furnishes a matter as efficacious as that produced by a primary vaccination; indeed we have the analogy of small-pox to support this fact, for experience too often shows, that a varioloid may give rise to the development of a confluent small-pox, whether the individual be vaccinated or no. There is some foundation, therefore, for the opinion which begins to prevail among the public, that the preservative effect of vaccination is only temporary, at least in a certain number of individuals; but this, unfortunately, does not diminish its value as a prophylactic, for we have it in our power to repeat the operation whenever circumstances may seem to require it.

Were the statistical account of small-pox cases preserved by physicians on an extensive scale, we should soon have data enough to draw some certain conclusions, but this is not the case, especially in England, where questions of public health, (unless they happen at the same time to affect commercial interests,) are totally neglected by the government, and left to individual zeal or taste for investigation. The canton of Bishwiller comprises about 25,000 inhabitants, and of these the greater part has been from time to time vaccinated by physicians appointed under the government; the non-vaccinated may amount, perhaps, to one-thirtieth of the whole population. In 1832-3, small-pox broke out in this district, and attacked 439 individuals, of whom 93 were not vaccinated, and 346 were. If we examine these 439 patients with regard to their age, we find that 103 were less than ten years of age; 146 from ten to twenty; 156 from twenty to thirty; 34 from thirty to forty, &c.

The result to be drawn from this comparative statement of ages is interesting and instructive. In the first place we may remark, that the class embracing children below ten years of age, is the most numerous in a population, and contains the greater number of non-vaccinated individuals; yet the amount of patients in this class is one-third less than for the two following. Whence this difference? The answer must be drawn from the modifying effects of time on the preservative power of vaccination. During the eight or ten years which succeed the first vaccination, the preservative effect of the matter is most complete, and gradually loses its influence with succeeding years. After the age of thirty or thirty-five, the number of patients was comparatively insignificant, because after this age the disposition to contract small-pox is very feeble, and hence re-vaccination is not so necessary for those advanced a little in life, as for the young or adults.—*Lancet*.

18. *Ulcerations of the Intestines cicatrized*.—M. SEDILLOT exhibited to the Anatomical Society of Paris, at their meeting of the 8th of August last, a portion of the intestine of an individual affected with dothinenteritis, from which he was convalescent, when he died from abscess of the elbow. Some of the plates of Peyer were perfectly cicatrized, and others partly so; in some places

the cicatrice reposed upon the serous tissue itself, the plates being entirely destroyed.—*Rev. Méd. Oct. 1833.*

19. *Note of a Case in which Thirteen Ounces of Cerebro-Spinal Liquid was Found.* By M. MONTAULT.—The subject of this case was a man sixty-eight years of age, who had always enjoyed good health. The 12th of June becoming intoxicated, as was habitual, he became delirious, with difficulty of moving. When he was admitted at the Hôtel-Dieu some days after, he was able to move all his limbs, but with little energy; his tongue was covered with a very thick, brownish crust; he had not entirely lost his faculties, but he gave a bad account of what he had felt; he was said to have a cerebral affection, the nature of which was not discovered, and he died the 19th, after having remained twenty-four hours in a comatose state. At the autopsy the only thing that was found to be wrong was that there were twelve ounces, seven drachms and a half of cerebral spinal liquid, and the membranes with which the liquid was in contact, were of a dull white colour and infiltrated. We do not know if it be proper to attach much importance to this anomalous quantity of cerebral spinal liquid. In a habitually healthy state, it appears that the quantity of this fluid varies from six to seven ounces in old men. The difference then is not as great as it would be at first thought, nevertheless it is a fact to be remarked, and perhaps some cases may be found resembling it.—*Journ. Hebdom. August, 1833.*

20. *New Theory of the Formation of Tubercles.*—At a late meeting of the Academy of Medicine, M. BRESCHET read an interesting report on this subject, of which the following is a *resumé*.

Various opinions have been promulgated on the formation of tubercles. Some regard them as products of inflammation; by others they are attributed to a peculiar action, which is not inflammatory; and some physicians refer the origin of tubercles to parasitical animals of the family called by M. Bory St. Vincent, *psychodiales*.

M. Kuhn, of Niederbroun, adopts this latter opinion. According to him, tubercles are originally nothing but acephalocysts, and *tuberculization*, a name invented expressly, is the result of the destruction of these animals. The author of the present paper has chiefly studied the development of tubercles in the lungs, and employed for that purpose a microscope, magnifying nine or twelve times. When you extract with precaution one of those small granulations, of a gray colour, which abound in the lungs of certain individuals, and are the origin of tubercles, and place it under the focus of the microscope, having lacerated it, you see that it is composed of other granulations still smaller; and the lacerated substance seems to be composed of an innumerable number of small albuminous globules, connected to another by hyaline filaments, and the whole enveloped by a layer of mucus. Granulations, therefore, appear to be constituted by a filamentous apparatus, surrounded by globules in great number. The analogy is clear and striking between this structure and that of the mould which forms on paste, bread, &c.

This analogy, without doubt, does not amount to a demonstration; however, the ideas of the author, (says M. Breschet,) deserve peculiar attention; they point out the way to a new theory, and to the probable existence of a new class of beings which has not hitherto been suspected. When we examine the granulations with care, we find a great number which become opaque in different points; others are already half opaque; finally, some have become perfectly opaque in their whole extent.

These observations afford a strong argument against individuals who regard the granulations as totally foreign to the production of tubercles. Tuberculization commences in the centre of the granulation, and extends from the centre to the circumference. It is effected by the absorption of the mucous surrounding the granulation, which is converted into a substance composed simply of the globules and hyaline filaments. The tuberculization goes on more readily in

certain individuals than in others, and may go on to such a degree as to obstruct the lungs altogether, and produce death before the tubercles are perfectly formed. M. Kuhn has also examined, with the microscope, the expectorations of phthisical individuals. When the globules which float in the more liquid matter were separated, he found them equally composed of hyaline filaments, and of small viscid globes surrounded with mucous; thus there is a striking resemblance between the globules found in the spittle, and the gray granulations disseminated through the lungs.

From these several facts the author concludes:—1st. That pulmonary granulations are composed of globules and hyaline filaments, clothed with mucus. 2d. That they are analogous to parasitical animals found in other substances. 3d. That they may be converted into tubercles, although this change is not always necessary. 4th. That tuberculation is effected by the absorption of the mucus, and finally, that we find the elements of these granulations in the expectorated matter.—*Lancet*, May 10th, 1834.

21. *On the Means of Preventing Scarlatina.* [Extracted from a Memoir presented to the Royal Academy of Medicine. By M. MIGUEL, M. D.]—Being convinced of the inefficacy of the hygienic and therapeutic means hitherto employed against the propagation of the scarlatina, the author of the present memoir was induced to make several experiments, from which he thinks himself justified in concluding “that the scarlatina, like many other analogous diseases, may be inoculated so as to determine a local inflammation which has little reaction on the economy, but is preservative in the same manner as the vaccine virus is against small-pox.” As a preliminary measure the author made numerous experiments with the vaccine and variolic matter on adults and children, from which he deduces the following proposition, viz.:—that it is possible to localize often, if not always, those eruptive diseases which are capable of being inoculated, and that individuals subject to be affected are preserved by this process from subsequent danger of contracting the disease. Since, then, the scarlatina may be inoculated, why should it not follow the same laws as variola, &c. and be localized like them, with a preservative influence on the constitution? This was a theory worthy of investigation. M. Miguel therefore was desirous to put it to the proof, and in November, 1833, an epidemic attack of scarlatina, which broke out at Nazelly, afforded him an opportunity of making the following experiments.

Experiment 1.—A young girl, the child of Dennis Carron, fifteen years of age, presented an example of scarlatina in the most unequivocal form. On the fourth day of the eruption the author pricked several papulæ with four lancets. The incisions did not bleed, but a yellow matter was discharged, and adhered to the point of the instrument. This was carefully preserved, and the author immediately proceeded to the house of a nurse, where several children from the *Madeleine* of Tours had been placed. Several slight incisions were here made in the arm of an infant twenty-seven or twenty-eight months old, and the matter contained on the points of the lancets was introduced. On the following evening, that is, thirty hours after, the incisions began to exhibit a blush of redness. On the second day the redness was well marked, and continued to increase in intensity during three days. Each inflamed prick of the lancet resembled, on the fourth day, a commencing vaccine pustule. On the fifth day after the inoculation the inflammation had disappeared. There was no general fever, and the health of the little patient was not disturbed in the slightest degree.

Experiment 2.—Fifteen days after the date last mentioned in the foregoing case, the other children of Dennis Carron were affected with scarlatina. M. Miguel now received the matter on twenty-four lancets, as in the preceding case, and within an hour again inoculated the little child which was the subject of the former observation, in six different places. The incisions now made did not become red, or exhibit any sign of a morbid action taking place in the part. M.

Miguel after this proceeded to the house of another nurse, and inoculated three young children, by making six incisions of the charge lancets on the arm of each. These experiments gave rise to inflammation in the case of one child only, aged four years; three of the lancet pricks inflamed, and produced as many points, which followed the same march as in the case of Carron's child, already described. This new inoculation is regarded by the author as nearly decisive of the question, for if the inflammation which took place in the arm of the first infant was merely traumatic, why was it not renewed on the second application of the virus, and why in the latter experiment did eighteen incisions give rise only to the formation of three pustules, which, as in the case of the child twenty-eight months old, followed the march of a scarlatinous inflammation?

Experiment 3.—It now remained to determine whether this local affection was a preservative against the scarlatina. On the 18th of January, 1834, the author was called upon to see the child of a mason, named Bocé, affected with scarlatina anginosa of the most severe form. The disease had existed twenty-four hours. The man, his wife, and three children, inhabited one low, damp, ill-aired apartment, and it was impossible to separate the sick child from the others. M. Miguel had frequently observed, that when scarlatina breaks out in a family, the first case usually precedes the others by twelve or fifteen days; he, therefore, proposed on the third day to charge a lancet by making an incision on the forearm of the sick child, where the eruption was most abundant, and to inoculate the virus into the other children. The mother consented to this proposal, and, accordingly, ten incisions were made in the thighs of a little sister, nine years of age, with a charged lancet. The boy, aged about twenty months, was inoculated in six different points; the epidermis alone was raised up on the point of the lancet, as in vaccination. On the following morning the incisions made in the thigh of the little girl were transformed into as many black points, from dried blood, each surrounded with a small red areola. On the second day this areola was larger, and of a deeper red. On the third day, the inflammatory circle remained stationary, but the skin of this part seemed to have become a little thicker than natural. The inflammation resembled exactly, in form, colour, and tumour, a papula of scarlatina. On the fourth day there was no change, and on the fifth all trace of inflammation had nearly disappeared, the skin remaining only a little brown. There was no fever, nor enlargement of the axillary ganglia. As to the boy, five of the incisions only became swollen and red like those of his sister; they were somewhat more developed and of a deeper colour than her's, a circumstance that might be attributed to the greater tenderness and vascularity of the skin in this young subject. Since the 19th of January up to the 1st of April these children have inhabited the same chamber, and slept on the same bed with their sister. No precaution of any kind was taken to preserve them from contracting the infection, yet both have remained perfectly healthy, and free from any eruptive attack.

These facts, though not sufficiently numerous to decide a question of this kind, are not without considerable interest, and should engage physicians to report, on as extensive a scale as possible, the experiments detailed.

MATERIA MEDICA.

22. *Some Remarks on the Plant which yields the Cascarilla Bark.* By DAVID DON, Esq.—There is reason to believe that many species of *Croton* afford a bark partaking more or less of the properties of cascarilla, and indeed this opinion is borne out by analogy with other genera among whose members similar qualities are generally found to prevail. It is a curious fact, however, that the *Croton cascarilla* of Linnæus possesses none of the sensible properties of cascarilla bark. The late Dr. Wright, whose knowledge of the medicinal

plants of Jamaica was unrivalled, appears to have been the first to determine this fact, and that the bark in question was derived from the *Croton eluteria*, of which a faithful representation will be found in Sloane's Jamaica, (vol. ii. t. 174. f. 2,) referred incorrectly by Linnæus to his *Croton glabellum*. The same opinion seems also to have been entertained by Linnæus himself, for in the first edition of his *Materia Medica*, the *Cascarillæ cortex* is mentioned as one of the products of *Clutia eluteria*, but he afterwards, as now appears on very insufficient grounds, altered his opinion in favour of a plant with which he was entirely unacquainted, except from the figure in Catesby's Carolina, (vol. ii. t. 46.) Of this plant, which he named *Clutia cascarilla*, he had then seen no specimen, and in the *Species Plantarum*, where it occurs for the first time, he has stamped it with the usual mark of an obscure species. Of *Clutia eluteria* he had a sample, from which he evidently drew up his description, in the *Amœnitates Academicæ*, although he confounded with it a Ceylonese plant, which he had taken up in the *Flora Zeylanica* from Hermann, and likewise two other totally different species, the first figured by Plukenet, which is *Croton micans* of Swartz, and the second by Seba, (*Thesaurus*, vol. i. t. 35. f. 3.) In the Lambertian Herbarium, there is a specimen from Curaçao exactly resembling the last-mentioned figure, which I should be inclined to refer to *Croton nitens* of Swartz. The specific character, which occurs throughout all Linnæus' works, of *Clutia*, or rather *Croton eluteria*, appears to refer entirely to the Ceylon plant, whose history is still involved in great obscurity.

Dr. Wright considered the Elutheria and Cascarilla barks as the produce of *Croton eluteria*, and this opinion is now pretty generally adopted by pharmaceutical writers; but I am disposed to regard them as derived from two distinct species, and I rather incline to the opinion of Boulduc, Spielman, and others, that the cascarilla bark is a production of the Spanish Main, for it does not appear that it ever was obtained from Jamaica, or even from the Bahama Islands, (from one of which the appellation Eluteria or Eleutheria is derived,) and it is now ascertained, from the recent observations of Messieurs Schiede and Deppe, that a bark, agreeing in every particular with the cascarilla bark of the shops, is collected extensively in the vicinity of Jalapa, at Actopan, and in the district of Plandel Rio, in the province of Vera Cruz, Mexico, where it is known by the names of Copalche or Quina Blanca. These gentlemen considered the plant at the time to be identical with the *Croton eluteria*, but although closely related, it is nevertheless essentially distinct from that species, differing in its broadly cordate, 5-nerved leaves, which are slightly peltate at their insertion, and of a more coriaceous texture. In *Croton eluteria* the leaves are ovate-oblong or elliptical, furnished with a solitary midrib, having obliquely transverse ramifications, and the base either obtuse or somewhat attenuated, but neither cordate nor peltate. The inflorescence is racemose, and in other respects nearly similar in both species. The tree grows to the height of twenty-five or thirty feet, is much branched, and clothed with a profusion of broadly cordate leaves, silvery underneath, and numerous clusters of white flowers. The bark is exteriorly of a gray colour, pale brown within, of an even fracture, possessing a strong aromatic flavour, and an agreeable bitter taste, and in other respects accords with the Cascarilla bark of the shops, for I have carefully compared samples of the bark sent by Messieurs Schiede and Deppe with others from the Apothecaries' Hall, and I think there cannot be a question as to their identity. To the Mexican species I would recommend the application of the name of *Croton cascarilla*, that of *Pseudo-China* given to it by Professor Schlechtendal, in his recent treatise on the subject, being in many respects objectionable, and leaving to the *Croton cascarilla* of Linnæus the more recent epithet of *linearis*, applied to it by Jacquin, being perfectly convinced of the identity of the latter with the Linnean *Cascarilla*, and that the distinctions hitherto relied on to keep them apart are of too trivial and variable a nature to be entitled to the importance which has been assigned them. The

specimen in the Linnean Herbarium appears to have been communicated by Philip Miller, and belongs to the West India variety, with narrower leaves, and consequently is what Jacquin meant by his *Croton linearis*. The glands at the insertion of the leaf, I observe, vary from two to four, although, in the specific character of *linearis*, they are stated to be uniformly two, and three in *Croton cascarilla*.—*The Edinburgh New Philosophical Journal*, April, 1834.

23. *Febrifuge Properties of Salicine*. By M. RICHELOT.—The bark of the white, crack, and Huntingdon willow, was long ago employed in the treatment of ague with various success; but its power over the disease appeared to be very questionable. The first chemists who analyzed it discovered in it no alkaline principle similar to quinine or cinchonine, and it gradually fell into disrepute. Fontana, however, maintained the existence of a certain febrifuge principle, to which he gave the name of *Salicine*. His opinion has since been corroborated by Buchner, Rigatelli, and Leroux, the last of whom was the first to employ it in France. Numerous trials were made of it in various quarters, and, of course, from possessing the charm of novelty, its praises were sounded in no ordinary tone. Doubts, however, continued to be entertained, which were confirmed by the result of some trials made at La Charité by M. Pelletier, by which it appeared, that in his hands, *salicine*, though very bitter, seemed to be far less active than the principle of the cinchonas.

Dr. Richelot mentions the trials made by various of its supporters, the results of which appear to be altogether negative, while other experiments tended to show that it is possessed of no obvious febrifuge power. The doses given in these experiments, varied from six to twenty-four grains. With the view of settling the question, M. Andral instituted several experiments, the particulars of which are recorded by M. Richelot. Ten patients of different sexes, whose ages varied from seventeen to thirty-eight, were selected for the purpose, and, after considering the results of these, as well as all that has been mentioned by others, M. Richelot comes to these conclusions:—1st, *Salicine* appears really to possess febrifuge qualities, but in so small a degree that we ought not to hesitate a moment in preferring the sulphate of quinine. 2d, *Salicine* may be employed in any case where irritation or inflammation exists, contraindicating the employment of the sulphate of quinine, in hectic fevers with periodical paroxysms and abundant diarrhœa, or where sulphate of quinine cannot be had. 3d, It is not only unnecessary but injudicious to employ it at the beginning in high doses. Six or eight grains administered between the paroxysms, on the same principles as sulphate of quinine, produce as good or even better effects than higher doses, though, if necessary, the doses may be increased.—*Edinburgh Med. and Surg. Journ. from Archives Générales*, September, 1833.

24. *New Anthelmintic. Spigèle anthelmintique, or Arapabaca*.—In a short memoir on the virtues of the above-named plant, M. NOVERRE, physician at Martinique, has drawn the attention of practitioners to the *arapabaca*, as an anthelmintic which is infallible in its action, enjoys a sedative power, and is also possessed of a peculiar property, which admits of its being administered in all possible cases, without aggravating inflammatory symptoms, should they happen to complicate the presence of worms in the intestinal canal. This latter quality gives it an immense advantage over turpentine and other stimulant purgatives, which are at present so universally employed in worm cases; and has been recognised in the plant by all physicians who practise in Gaudaloupe, Cayenne, Martinique, and South America.

The “*Spigèle anthelmintique*,” *arapabaca*, is an herbaceous annual plant, of the pentandria monogynia, growing in South America. The stem of the plant is round, and the leaf verticillated round the summit. It is commonly administered in the form of syrup, of which three spoonfuls are given to an adult, or to a child of three years old a tea-spoonful. At the moment of administration it is customary to add a spoonful of cold water and a few drops of lemon-juice.

The same dose is repeated for three days, and then a mild purgative is given. A singular effect of the medicine is sometimes the production of a slight amaurosis, when it is administered under the influence of solar or artificial light. Amongst the most remarkable properties of this remedy the author enumerates the following:—Its action is always efficacious: it is agreeable to the taste, and children always take it without evincing any repugnance. Enjoying a sedative property, it calms the nervous symptoms which so frequently complicate the verminous disorders of childhood. It is not calculated to produce or aggravate inflammation of the intestinal canal, and may therefore be administered in cases where most other anthelmintics are inadmissible. However, it is prudent not to administer it whenever there are any symptoms of cerebral congestion; for it is a narcotic acrid poison, and if given in too strong a dose, may occasion severe accidents. The action of the plant generally takes place on the second, or even the first day after its administration. The author supports this assertion by an enumeration of cases in which the efficacy of the remedy as an anthelmintic is fully established; and says, it is administered with confidence by all the inhabitants and practitioners of the Antilles and Martinique.—*Lancet*, from *Gaz. Méd.*

25. *Active Principle of Sarsaparilla*.—M. БАТКА attributes the properties of sarsaparilla to a peculiar acid, to which he has given the name of parillinic. In the state of hydrate, this acid resembles fish scales; melted it might be taken for a resin. It reddens litmus paper, and dissolves in alcohol, from which it separates in a crystallized state by evaporation; it is very little soluble in cold water, but dissolves very readily in boiling water, to which it communicates the property of foaming. The chlorate of calcium and of mineral acids, such as hydrochloric acid, precipitate it in gelatinous flocculi. Nitric acid dissolves it without changing its nature. It forms with the alkalies soluble combinations, uncrystallizable, and which communicate to water the property of frothing, like the infusions of sarsaparilla. In order to obtain parillinic acid, M. Batka prepared an extract of sarsaparilla with pure alcohol, treated this extract with boiling water, which dissolves the parillinic acid, evaporated to dryness, and redissolved the residue by hydrochloric acid; the parillinic acid separates in flocculi, which he washes, and afterwards dries.—*Journal de Pharmacie*, Dec. 1833.

26. *Extract of Guaiacum*.—M. SOUBEIRAN has published in the January No. (1834,) of the *Journal de Pharmacie*, some observations on the extracts of guaiacum, which merit the attention of practitioners. The wood of the guaiacum is very resinous, and on the contrary contains but a very small portion of extractive matter and gum, which therapeutic experiments have not shown to possess very marked properties. It results that cold water dissolves but little of the guaiacum, and that it cannot be dissolved in any great quantity except by long boiling, during which the extractive matters dissolve in some degree the masses of resin which have been softened and detached by boiling. Hence we must conclude, that to derive any effects from watery drinks prepared with the guaiacum, this substance must be employed in large quantities, divided in very small pieces, and long boiled. The different formulæ recommend the extract of guaiacum to be prepared by decoction, and the resinous deposit which forms as the evaporation proceeds, to be carefully separated. It is evident from the above, that the extract thus obtained is entirely destitute of resin, that is, of the most active principle of guaiacum. It is better as recommended by the Geneva pharmacopœia not to separate the deposit which forms during the evaporation, but to divide it, on the contrary, in the extract by means of a small quantity of alcohol, or to use only the resin of guaiacum, or the decoction itself, which in fact is but a particular mode of obtaining the resin of the guaiacum diffused in an aqueous vehicle.

27. *Experiments on the Therapeutic Properties of Codeine.*—This new alkaline substance has been recently obtained from opium by M. Robiquet, and its therapeutic effects have been studied at Amiens by M. BARBIER, surgeon to the *Hôtel-Dieu* of Amiens, who communicated some observations on them to a late sitting of the *Royal Academy of Medicine*. These efforts seem to establish the chemical specialty of codeine, differing as they evidently do from either opium or morphine. The codeine was administered in the dose of one or two grains. Like opium and all medicinal substances derived from that drug, codeine operates on the nervous system, but its medical influence seems very small on the brain; it makes no impression whatever on the spinal marrow or nerves derived from it, and its whole activity seems to be exhausted on the nervous plexus of the great sympathetic. Thus, in cases of gastralgia, characterized by pain in the epigastric region, and a sensation of burning about that part, with paleness of the countenance, anxiety, &c., codeine has quickly dissipated all the accidents which it is impossible not to refer to the nervous plexus of the great sympathetic. M. Barbier has also seen codeine produce considerable alleviation in cases where the tunics of the stomach were beyond all doubt degenerated. Codeine also produces sleep when given in sufficient quantity, but this sleep differs from that occasioned by opium; it is never accompanied by a sensation of weight in the head, dizziness, &c., nor does its administration ever give rise to cerebral congestion. M. Barbier has been convinced by the observation of several facts that codeine has no influence over the spinal marrow or its nerves. Many patients affected with the gastralgic pains already alluded to, had also neuralgic pains in the head, loins, thighs, &c.; the uneasiness about the abdomen was quickly relieved by the remedy, but the pains in the limbs, back, &c., remained unchanged. This occurred upon so many occasions as to leave no doubt on the subject. It is necessary to remark, that all the patients on whom the codeine was tried, had previously employed, without any benefit, the liquid laudanum of Sydenham. Codeine does not produce any apparent change in the exercise of the circulation or respiration, nor does it disturb the digestive organs or produce constipation. When applied to the skin, it has not given rise to any remarkable phenomena. In one case, two grains were applied to the surface of a recent blister, but the neuralgic pains for which the blister had been employed were not in the least alleviated.—*Lancet and Gaz. Méd.* 8th March, 1834.

28. *First Effect of Cataplasms on the Skin produced forty-eight Hours after their Removal.*—A very interesting example of this is related by T. W. CHEVALIER, Esq. in the *London Medical Gazette*, of 5th of April last. The patient, when in a state of apoplectic insensibility, had mustard plasters applied to his feet, and their application continued forty-eight hours, because they produced *during that period* no sensible effect. They were then removed, and after a second interval of forty-eight hours, and after sensibility was restored, it was observed that the feet first became flushed and inflamed, and presently began to blister upon the soles, the heel, and the instep, to an extent which it was painful to witness.

There are probably few practitioners of any experience who have not witnessed ill effects resulting from the too long application of cataplasms and blisters, especially to patients whose consciousness is dull. The rule usually followed, not to remove sinapisms until they become extremely painful, or until the patients exhibit evidence of feeling them, and of keeping on blisters until they draw, cannot, in many cases, be too strongly reprobated. The worst ulcers, and the most difficult to heal, that we have ever met with, were produced by the patient following the instructions of their physician, to keep on the cataplasm as long as they could bear it.

“I have always observed,” says Mr. Chevalier, “in the use of the mustard cataplasms, that its sensible operation on the skin, in unconscious patients, and in such as are suffering, at the time of its application, from *collapse*, is not by any means in direct proportion to the effects which it produces some days after

its removal; while, even in patients who can make known their complaints, the impression that will be made by such applications is not to be calculated from the visible and palpable irritation produced by them while applied.

“Besides extensive experience, much science is required to estimate, to any certainty, the consequences of an excoriating application, especially to the skin of young persons. The severest is the safest, as most likely to warn the ignorant practitioner of its imminent effects; but I have seen three children lying dead at once, from blisters kept on for twenty-four hours, because, in that time, they had not raised the cuticle; for when they raised it, which was as long afterwards, the integuments sloughed, and they all three died of the sloughing.*

“A common blister, applied to most persons for six hours only, will rise about the twelfth or eighteenth, although it has been removed at the end of the six; for the irritation, although not *sensibly* affected at that time, is really and effectually accomplished; and we may safely adopt it as a rule, that sinapisms, or any other excoriants, are not to be continued on the body according to their effect while thereon, but according to the general experience of our profession with respect to the irritation they afterwards produce, and that it is an error to continue their application after the period in which they may be reasonably expected to have insured the *future* blush, vesicle, or superficial mortification, expected from them; since, in awaiting their first notable operation on the skin, we may perhaps insure a greater degree of mischief than it is in the power of the ablest practitioner to allay or controul.

“It appears to me, that ignorance of this aphorism, (if I may so call the doctrine I have ventured to promulgate,) and ignorance of the facts on which it rests, have led to the many cruel deaths, inflicted even in this metropolis, not long ago, on patients who were *merely suspected*, or *pretended*, to be liable to internal diseases, removeable by external irritation. In the legitimate use of unguentum antimonii tartarizati, for example, we do not rub it in till the pustules appear, but for so many minutes, in expectation of their future development, and in due time they rise; but if we persevere too long in the infriktion of that ointment, of St. John Long’s *nostra*, sinapisms, or any similar remedy, the consequence may be fatal, as has been proved by facts equally notorious and deplorable.”

PRACTICE OF MEDICINE.

29. *Treatment of Acute Gastritis.* By WILLIAM STOKES, M. D.—We now come to treat of simple acute gastritis. Here there are three principal indications. One of these is to remove inflammation as speedily as possible. You cannot, as under other circumstances, leave this disease to nature; the organ affected is one of the utmost importance to life; and if you do not cut it short at once, a typhoid state comes on, to which the ordinary and efficient means of antiphlogistic treatment are inapplicable. The first indication then is to cut short the inflammation as speedily as possible. The next thing is to prevent the introduction of any thing into the stomach which will excite the physiological action of that viscus. You are aware that while the stomach is engaged in the process of digestion, its vascularity is very much increased, and that this, which in health is merely a physiological condition, is unaccompanied by any kind of danger. But in a state of disease it proves a source of violent excitement, and superadds very much to the existing inflammation. You must, therefore, be extremely cautious with respect to what enters your patient’s stomach, and carefully remove every thing capable of adding to the excitement which

* “After the sloughing took place, those children were under the best possible care.”

always attends gastritis. The third indication in the treatment is to modify and remove the sympathetic or secondary irritations.

Now I shall suppose that we have to treat a case of simple acute gastritis not produced by the swallowing of corrosive poison or indigestible food. Here we have a patient labouring under violent inflammation of one of the most important organs in the body; and the question is, are you to adopt the ordinary and usual mode of stopping inflammation by opening a vein in the arm? I must here state, that we are very much in want of a series of well-established facts to guide our practice on this point, and to inform us how far general bleeding is useful in acute inflammation of the stomach. At the present period, the question is by no means settled, and the practice is uncertain. I believe, however, that when we are called in at an early period of the disease, where the patient is young and robust, the stomach previously healthy, the fever high, and the pain great, we may have recourse to general bleeding with advantage; bearing this in mind, however, that you are not to expect to cut short the inflammation by the use of the lancet. Inflammations of the mucous membrane of the stomach and bowels, and perhaps of the lungs, are not to be overcome at once by the lancet; the only cases in which you can expect to cut short an inflammatory attack are those in which the parenchymatous tissue of an organ, or its serous membrane, is affected. This is a general and important law. You will often be able to cut short a hepatitis or a pneumonia by a single bleeding, but you will not by the same means be able to repress a bronchitis or an inflammation of the mucous membrane of the intestines. If you bleed in gastritis, bleed at an early period; not too largely, or with the expectation of cutting short the inflammation, but in order to prepare your patient for the grand agent in effecting a cure—local bleeding. This is the principle on which you are to employ the lancet.

In the treatment of gastritis there is nothing more useful, nothing more decidedly efficacious, than the free and repeated application of leeches, whether the case be idiopathic, or produced by the swallowing of a corrosive poison. In this treatment of acute gastritis, you will frequently see, perhaps, the most striking instances of the rapid and decided utility of medical treatment; you will see the vomiting subside almost immediately, the epigastric pain and tenderness disappear, the cough and head-ache relieved, the fever subside, and the tongue change after the application of leeches. To remove the symptoms, the best and most effectual means are leeches; and these must be applied again and again, according to the duration and obstinancy of the symptoms. Here I wish to make one remark of importance. From an opinion very prevalent in former times, that pain and inflammation were inseparable, the older practitioners thought that when the pain ceased the inflammation also ceased; and hence many of our predecessors, and I fear some of our contemporaries, never think of reapplying leeches, no matter what the existing symptoms may be, if pain has been relieved by the first application. Nothing is more erroneous than this practice. It frequently happens that the pain and epigastric tenderness are removed by the first application of leeches, but the breathing is still quick, the fever high, and the thirst ardent. So long as these symptoms remain, the inflammation of the stomach is still going on. The mere subsidence of pain or tenderness of the epigastrium should never prevent us from resorting to the application of leeches. In leeching the belly for inflammation of the stomach or bowels, it is a common practice to apply a poultice over the leech bites, with the view of getting away as much blood as possible. I am not inclined to approve of this practice. The weight of a poultice is frequently troublesome, and the heat produced by it disagreeable; the patients desire cold, and for this purpose they will often throw off their bed-clothes, feeling a degree of relief from exposing the epigastrium to a stream of cool air. Some practitioners have applied pounded ice over the stomach with good effects, as we see it frequently applied to the head with the same results in cases of encephalitis.

phalitis. Again, the application of poultices causes an oozing hæmorrhage, the amount of which it is impossible to calculate, which is often hard to be arrested, and which, in debilitated persons and children, has the effect of lessening the powers of life without removing the original disease. It is much better to leech again and again than to do this. Where there is not much epigastric tenderness you may apply a cupping-glass over the leech bites with advantage, as you can get away as much blood as you choose, and the tendency to after-hæmorrhage from the leech bites is diminished by the application of the cupping-glass. In very young subjects the tendency to obstinate hæmorrhage from leech bites is so great, that many practitioners are afraid to use leeches, and I believe some children have been sacrificed to this fear. The best mode of managing this is, if the leech bites cannot be stopped by the ordinary means, (and in very young children they seldom can,) to stop them at once by the application of caustic. Do not lose time in trying to arrest the flow of blood with flour, or lint, or sticking plaster; wipe the blood off the bite with a piece of soft dry lint, plunge into it a piece of lunar caustic scraped to a point, give it a turn or two, and the whole thing is settled; and you can generally go away with the agreeable consciousness of having prevented all further danger, and without being uneasy lest your patient should bleed to death in your absence.

With respect to the management of the bowels in acute gastritis, a few observations will suffice. You will always have to obviate the effects of constipation; both in the acute and chronic form of the disease there is always more or less constipation; in fact, the same condition of the bowels is generally observed in both. Now, if you attempt to relieve this constipation in acute gastritis, by administering purgatives, you will most certainly do a vast deal of mischief. Nothing can exceed the irritability of the stomach in such cases; the mildest purgatives are instantly rejected, even cold water, or effervescing draughts are often not retained, and a single pill or powder is frequently thrown up the moment it is swallowed. Under such circumstances, it is plain that the administration of purgative medicine is totally out of the question. Even though the stomach should retain the purgative, you purchase its operation at too dear a price; for it invariably proves a source of violent exacerbation, kindling fresh inflammation in an organ already too much excited. In this state of things the best thing you can employ to remove constipation is a purgative enema, repeating it according to the urgency or necessity of the case. Where there is no inflammation in the lower part of the intestinal canal, you may employ injections of a strong and stimulating nature, with the view not merely of opening the bowels, but also of exercising a powerful revulsive action. I shall mention here an interesting fact, proving that stimulant injections have a decided revulsive effect; and that their influence extends not only to other portions of the intestinal tube, but also to distant parts of the system. In South America, where, from the heat of the climate, and the prevalence of bilious affections, sick head-ache is a very common and distressing symptom, a common mode of cure is to throw up the rectum an extraordinary enema, composed of fresh capicum, and other aromatic stimulants. The irritation which this produces acts as a very efficacious and speedy revulsive, causing the almost immediate removal of the cerebral symptoms.

In those cases of gastritis, where not only purgatives, but even the mildest substances are rejected, the plain common sense rule is to give nothing. Where cold water is borne by the stomach, it may be taken in small quantities, as often as the patient requires it. Solid ice, too, may be given with decided benefit. There is a mistake which prevails with respect to the employment of ice in gastritis, which I wish to correct. Some persons object to its use, and reason in this way:—persons who have taken a quantity of cold water, or ice, when heated by exercise, have been frequently attacked with gastritis and fever, and consequently the use of these substances must be attended with danger in case of gastric inflammation. This, however, is false reasoning; you need not be afraid to order your patient ice ad libitum; depend upon it, there

is no danger in employing either ice or cold water in gastritis. There is nothing so grateful to the patient as ice. Let a quantity of it be broken up into small pieces about the size of a walnut; let your patient take one of these pieces, and having held it in his mouth for a few moments to soften down its angles, let him swallow it whole. The effect produced by this on the inflamed surface of the stomach is exceedingly grateful, and the patient has scarcely swallowed one portion when he calls for another with avidity. It will be no harm, gentlemen, if I should here mention to you a secret worth knowing. There are few things so good for that miserable sickness of the stomach, which some of you may have felt after a night's jollification with a set of pleasant fellows, as a glass of ice; Byron's hock and soda-water are nothing to it.

After the first violent symptoms of the disease have been subdued, I believe the very best thing which can be given is cold chicken broth. The point which we are always to keep in view is to remove inflammation from the stomach, and this should regulate the use of every thing taken into the stomach. I believe we might derive much advantage from anodyne injections in gastritis. I cannot say that I have ever employed them in such cases; but if I were to reason from their utility in other forms of abdominal inflammation, I should be induced to look upon them as entitled to some consideration. There is another point to which I will briefly advert. In the treatment of acute gastritis, there is nothing more commonly used than effervescing draughts; yet I have frequently seen them produce distinct irritation of the stomach. In cases where gastric irritability is excessive, I would not advise you to give effervescing draughts, or if you do, watch their immediate effect; see how the first one has agreed with the stomach before you venture to give any more. Patients labouring under this disease should be kept extremely quiet, as frequently a slight motion brings back the vomiting. Every thing which is swallowed should be in small quantity; a large quantity of any substance frequently causes a return of the vomiting, by distending and irritating the stomach. One of the best things you can give, and the best way of giving it, is iced lemonade, giving a table-spoonful from time to time. The extremities, which are generally cold in cases of intestinal disease, should be swathed in warm flannel.

I shall mention here a rule which should be carefully observed in the after-treatment. A patient has recovered from the violent symptoms of the disease; the fever, thirst, pain, epigastric tenderness, and sympathetic affections have subsided; but he still is confined to bed, and in a state of great debility. Some patients under these circumstances have been unfortunately lost by allowing them to sit up in bed, or on the night chair. The nurse will sometimes, through ignorance, suffer a patient, thus enfeebled, to risk his life by sitting up in bed; sometimes during the course of the night she is overcome by sleep; the patient has a call to empty his bowels; and not wishing to disturb her, attempts to get up, and is found in some time afterwards sitting on the night chair quite dead. This is an unfortunate termination for the physician, as well as the patient. A German author, Hoffmann, has written a treatise on the danger of the erect position after acute diseases; and in the course of the work, which is a very interesting one, he cites numerous instances of its bad effects. Not very long since, a patient was lost in the Meath Hospital by the nurse allowing him to sit up after a severe attack of enteritis. Such also was the melancholy cause of death in the case of the late Mr. Hewson, one of my best and earliest friends. He got a severe attack, which was subdued with difficulty, and his convalescence was doubtful and protracted. One night, in the absence of his attendant, he got up for the purpose of emptying his bowels, and was found some time afterwards on the night chair nearly dead. He was immediately brought back to bed, and the necessary means employed to relieve him, but without much benefit, for he never recovered the effect produced on his debilitated frame.—*Lond. Med. and Surg. Journ. January 18th, 1834.*

30. *Treatment of Chronic Gastritis.* By WILLIAM STOKES, M. D.—[Extracted

from Lectures on Practice of Medicine.]—The first thing you should do, when called to treat a case of dyspepsia, is to ascertain whether it be a purely nervous disease, or a chronic gastritis. The majority of practitioners give themselves no trouble about this matter, not recognising the fact, that, of the number of dyspeptic persons who seek for medical advice, a considerable proportion are really labouring under a chronic gastritis, and forgetting that in consequence of long-continued functional injury, what was at first but a mere nervous derangement may afterwards become complicated with organic disease. You must also bear in mind, that the stomach is perhaps placed under more unfavourable circumstances for bringing about a cure than any other organ, because the life of the individuals demands that the stomach, though in a state of inflammation, should still continue to perform its functions. In treating diseases of other organs, you will have the advantage of a comparative state of rest, but in a case of the stomach, if you wish to preserve life, you cannot prohibit nutriment, and consequently you must run the risk of keeping up these periodic vascularities which its condition requires, which, though harmless in health, become a source of evil when the stomach is diseased. The obvious deduction from this is, that the cure of a chronic gastritis depends as much upon regimen as upon medical treatment, and particularly where the symptoms have arisen from long-continued excitement, as in the case of persons who live highly. Here the treatment chiefly depends on regulating the diet, and if your patient has sense enough to live sparingly for a few weeks or months, you may be able to effect a cure without other treatment. The great error is, that most practitioners attempt to cure the disease by specifics, and when these fail, they then go to the symptomatic treatment, prescribing sometimes for acidity, sometimes for nausea, sometimes for flatulence, sometimes for constipation, or “the liver,” or debility.

You should be careful in the examination of such cases, and should try to ascertain, whether these symptoms may not depend upon inflammation of the stomach; for as long as the patient is in this state, the less you have recourse to symptomatic or specific treatment the better. It is hard to mention one single medicine which in this state will not prove stimulant, and if the stomach be unfit for stimulants, it must be unfit for the generality of medicines. There are numbers of cases of persons labouring under chronic gastritis, which have been cured by strict regulation of diet, and by avoiding every article of food requiring strong digestive powers. We find that articles of diet vary very much in this respect; some are digested with ease, some with pain. We might express this otherwise, by saying, that some require very little excitement of the stomach, and others very great vascular excitement. Patients in this irritable state of stomach, can scarcely bear any kind of ingesta; and when you consider the great vascularity, thickening of the mucous membrane, and tendency to organic disease, you will be induced to think that every thing entering the stomach should be of the mildest kind, and not requiring any powerful determination of blood to that organ.

If you continually prescribe for symptoms, neglecting or overlooking the real nature of the disease, giving arsenic to excite the system, and iron to remove anæmia, and bitter tonics to improve the appetite, and alkaline remedies for acidity, and carminatives to expel flatus, you will do no good; you may chance to give relief to-day, and find your patient worse to-morrow; and at last he will die, and you may be disgraced. On opening the stomach after death, you are astonished to find extensive ulceration, or perhaps cancerous disease. Very often, in such cases, practitioners say that it is cancerous disease, and that no good can be done. But the thing is to be able to know, when you are called to a case, whether it is a case of mere nervous dyspepsia, or chronic inflammation of the stomach. Some of the best pathologists think that most of the cancerous affections of the stomach are in the beginning only chronic inflammations of that organ.

I believe we have not yet in this country adopted the plan of moderate ap-

plication of leeches to the epigastrium in cases of chronic gastritis. I have seen in many cases great benefit result from the repeated application of a small number of leeches to the epigastrium, at intervals of two or three days. Here is a point which you will find very useful in practice. You will meet with cases which have lasted for a long time; cases where there is strong evidence of organic disease, and which have resisted the ordinary dyspeptic treatment. You will be called frequently to treat these three different cases, where the disease has been of long duration, where there is distinct evidence of organic disease, and where the disease has resisted the ordinary dyspeptic treatment. Here is a case of a patient labouring under what is called indigestion, and which has resisted the stimulant, and tonic, and purgative treatment.—Here is one fact. In the next place, the disease is chronic, and the probability is, that there is inflammation, and consequently that there is chronic gastritis. Now if, in such a case, you omit all medicine by the mouth, apply leeches to the epigastrium, keep the bowels open by injections, and regulate the diet, you will often do a vast deal of good. I have seen, under this treatment, the tongue clean, the pain and tenderness of the epigastrium subside, the acidity, thirst, nausea, and flatulence removed, the power of digestion restored, and all the symptoms for which alkalies, and acids, and tonics, and purgatives were prescribed, vanish under treatment calculated to remove chronic inflammation of the stomach.

What is next in importance to regulated regimen and local bleeding?—A careful attention to the bowels, which in chronic gastritis are generally constipated, and this has a tendency to keep up disease in the upper part of the digestive tube. Is this to be obviated by introducing purgative medicine into the stomach?—No. If you introduce strong purgative medicine by the mouth, you will do a great deal of mischief. You must open the bowels by enemata, or if you give medicine by the mouth, by the mildest laxatives in a state of great dilution. A little castor oil, given every third or fourth day, or a little rhubarb with some of the neutral salts, will answer in most cases. The diet, too, can be managed, so as to have a gently laxative effect. The use of injections is, however, what I principally rely on. I have seen many cases of gastritis cured by the total omission of all medicine by the mouth, by giving up every article of food which disagreed with the stomach, and by the use of warm water enemata. I have seen this treatment relieve and cure persons whose sufferings had lasted for years previous to its employment, and who had been considered by eminent practitioners to labour under organic disease of an incurable nature. It is important that you should bear this in mind. The old purgative and mercurial treatment of gastritis, I am happy to say, is rapidly declining; and British practitioners are now convinced, that they cannot cure every form of dyspepsia by the old mode of treatment. I do not deny that many diseases of the digestive tube may be benefited by the mild use of mercury and laxatives, but I think I have every reasonable and scientific practitioner with me in condemning the unscientific routine practice, which was followed by those who took the writings of Abernethy and Hamilton for their guide. I do not say that, where cases of gastric inflammation, treated after the plan of Mr. Abernethy, have proved fatal, the medicines have destroyed life; I merely assert that the patients died of inflammation, over which these medicines had no controul; and the error lay in mistaking and overlooking the actual disease, as much as in its maltreatment. You will find some practitioners, (they are becoming fewer in number every day,) who seem to have but two ideas, the one a purgative, the other a pot full of fæces; but the connecting link,—the gastro-enteric mucous membrane,—that vast expansion, so complicated, so delicate, so important, seems to be totally forgotten. But practitioners are now beginning to see that purgatives are not to be employed empirically; that they should be administered in many cases with great caution, and with a due attention to the actual condition of the alimentary canal, and that they have been a source of great abuse in the medical practice of these countries.

Next to leeching and a proper regulation of the bowels is the employment of gentle and long-continued counter-irritation over the stomach. This may be effected by the repeated application of small blisters, or by the use of tartar emetic ointment. I have been in the habit of impressing upon the class, that the tartar emetic ointment used in these countries is too strong, the consequence of which is an eruption of large pustules, which are excessively painful, and often accompanied with such disturbance of the constipation as amounts to symptomatic fever. In fact, tartar emetic ointment of the ordinary strength produces so much irritation, that few patients will submit to it long. The form which I recommend you to employ is the following:—Take seven drachms of prepared lard, and instead of a drachm of tartar emetic, which is the usual quantity, take half a drachm, directing in your prescription, (this is a point of importance,) that it be reduced to an impalpable powder; and you may add to it what will increase its action, one drachm of mercurial ointment. This produces a crop of small pustules, which give but little pain and are easily borne; and the counter-irritation may be kept up in this way for a considerable time, by stopping for a few days, until the eruption fades away, and then renewing the friction. I have often seen the utility of this remedy exemplified in cases of chronic gastritis, where the symptoms of gastric irritation, which had subsided under the employment of friction with tartar emetic ointment, returned when it was left off, and again vanished when it was resumed. The case of the celebrated anatomist, Beclard, furnishes a very remarkable proof of the value of a well-regulated diet and repeated counter-irritation in the treatment of this disease. While he was engaged in the ardent prosecution of his professional studies he got an affection of the stomach, which he considered to be a chronic gastritis, and immediately put himself under a strict regimen, using at the same time repeated counter-irritation. He kept up the counter-irritant plan for a considerable length of time, for he found that, when he discontinued it, the gastric symptoms had a tendency to return. In this way he got completely rid of the disease. Several years afterwards he died of an attack of erysipelas; and on opening his stomach, the cicatrix of an old ulcer was discovered in the vicinity of the pylorus, which was exactly the spot to which he had referred his pain during the continuance of his gastric affection.

Gentlemen, there is perhaps no science in which the motto "*medio tutissimus ibis*" is of more extensive application than in medicine. Some physicians on the continent, particularly the disciples of Broussais, having repeatedly witnessed the advantages of strict regimen and local depletion in chronic gastritis, have pushed this practice too far. They seemed to forget that the system requires support and nutrition, which can be effected only through the agency of the stomach; they saw the evils which result from the use of stimulating food in cases of chronic gastritis; and looking to these alone, they ran into the opposite extreme, the consequence of which was, that they kept their patients so long upon low diet, that they actually produced the very symptoms which they wished to remove. The patients became dyspeptic from real debility of the stomach and the whole frame. You remember a general law of pathology to which I have alluded on a former occasion, and which I shall again mention, as it illustrates this point, namely, that opposite states of the economy may be accompanied by the same symptoms. Thus we observe, that palpitation may depend on two different causes—on a sthenic or asthenic condition—on the presence of too much or too little blood in the heart. Now, it frequently happened that patients labouring under chronic gastritis, and who had been treated for a long time after the strict plan adopted by the Broussaists, finding themselves not at all improved, went to other physicians who had different views, and were rapidly cured, by being put upon a full nutritious diet. In this way numerous cases, which water diet and depletion had only aggravated, were relieved, and the consequence was, that a mass of facts was brought forward and published, not long since, by a French author, against the antiphlogistic treatment of dyspepsia and chronic gastritis. It must be stated, however, that the

cases which he published were chiefly those in which the depleting system had been carried to excess, and that they cannot, therefore, be received as proofs of the value of a stimulating diet in the treatment of chronic inflammation of the stomach. Bear this in mind; the sooner you can put your patient on a nutritious diet the better will it be for him. It would be absurd to keep a patient for many months, as the Broussaists have done, on slops and gum-water. It will be necessary for you to feel your way and improve the diet gradually. Commence by giving a small quantity of mild nutritious food; if your patient bears it well, you can go on; if the gastric symptoms return you can easily stop. If a small portion of the milder species of food rests quietly on the stomach, you may increase it the next day or the day after, and thus you proceed to more solid and nutritious aliment, until the tone of your patient's stomach regains the standard of health. Never lose sight of this fact, that you may have a case of dyspepsia depending on a chronic gastritis, in which, though you remove the *inflammation* by a strict antiphlogistic treatment, you may not by this remove the *dyspepsia*; and if you continue to leech, and blister, and starve your patient *after the inflammatory state be removed*, you will do great injury. Such a patient, falling into the hands of another practitioner who treated him on a different system, might be relieved, and his case quoted against you and your treatment, though this, at the commencement, was judicious and proper.

With respect to internal remedies, the school of Broussais think that there is nothing required but cold water and gum. This is going too far. In a former lecture I have drawn your attention to the fact, that in the treatment of acute inflammation there is a point where antiphlogistics should cease, and where tonics and stimulants are the most efficient means of cure. Of this fact the disciples of Broussais appear to be ignorant, and they consequently declared against every remedy for chronic gastritis except leeches and cold water. Now is this right? I think not. We find that, in all cases of gastric inflammation, a change in medication seems to be useful at some period of the disease, that is, a change from antiphlogistics to tonics and stimulants, and I believe that in cases of chronic gastritis these remedies may be used with very great advantage, having, of course, premised depletion and counter-irritants. I believe too, that most of the remedies, which we see every day unsuccessfully employed, would have acted beneficially, if the preparatory treatment which I have mentioned had been adopted. Among the best remedies of this kind is the oxide of bismuth; I have seen more benefit from the use of this than of any other medicine, after the treatment already alluded to. Generally speaking, the list of internal remedies for chronic gastritis is very small, but after the use of antiphlogistics you may prescribe the vegetable tonics and oxide of bismuth with advantage. The most decidedly valuable remedy, however, in the after stage of a chronic gastritis is the acetate of morphia, which I am convinced has a very powerful effect in allaying chronic irritation of the stomach. Dr. Bardsley of Manchester, in one of his published works, entitled "Hospital Facts and Observations," adduces many cases of gastric irritation which were completely relieved by the use of this remedy, and I am perfectly satisfied of the truth of his statements. It may be said that Dr. Bardsley's cases were only instances of dyspepsia. But as his cases were extremely numerous, some of them of long standing, and the symptoms very severe, the great probability is, that some of them at least must have been cases of chronic gastritis. I know very few books, the perusal of which I would more strongly recommend to you, than Dr. Bardsley's accurate and instructive work. The great besetting sin of medical writers is, that their statements of successful practice are grounded on a very limited number of cases, or that, in publishing the result of their practical investigations, they only give their successful cases, and leave out those in which the treatment recommended has been found inefficacious. Yet this is a circumstance which should never be neglected. If a man declares that he has discovered a cure for gastritis, or dyspepsia, and brings forward one hundred

cases in which the remedy has done good, the statement is still unsatisfactory and insufficient, because there may be one thousand cases in which it has totally failed. Unless he comes forward and gives both his successful and unsuccessful cases, of what value are his statements? Dr. Bardsley, with the candour and good sense which always characterize the philosophic inquirer, gives the result of *all* his cases, forms them into tables, and then leaves his readers to judge for themselves. From an inspection of these tables, you will be convinced of the efficacy of acetate of morphia in the treatment of chronic gastritis. I have been in the habit of using it with the most gratifying results after leeching, regulating the diet, and paying proper attention to the state of the bowels. There are some forms of the disease in which it is more useful than others. The particular form in which it proves most serviceable, is where there is a copious secretion of acid from the stomach, (that form in which all kinds of alkalies have been exhibited,) where severe pain and constant acidity are the prominent symptoms. Here I have seen the acetate of morphia act exceedingly well. You may begin with one-twelfth of a grain, made into a pill with crumb of bread, or conserve of roses, twice a-day; the next day you may order it to be taken three times, and you may go on in this way until you make the patient take from half a grain to a grain and a half in the twenty-four hours. I shall here mention the circumstances of a case, which I do not mean to bring forward as an instance of cure, but as an illustration of the extraordinary power which acetate of morphia possesses in relieving gastric irritation. A gentleman of strong mind and highly cultivated intellectual powers, which he kept in constant exercise, got a severe chronic gastritis; his appetite completely declined; he had frequent vomiting of sour matter; foetid eructations; and such violent pain in the stomach, that he used, when the attack came on, to throw himself on the ground, and roll about in a state of indescribable agony. He applied to various practitioners, had several consultations on his case, and the opinion of the most eminent medical men was, that he had incurable cancerous disease of the stomach. These symptoms continued for several years, but for the last two or three years they were quite intolerable. He had repeated cold sweats, vomited every thing he took, even cold water, was reduced to a skeleton, and led a life of complete torture. Under such circumstances he tried, for the first time, by my advice, the acetate of morphia. He tried it first in doses of one-tenth of a grain three times a-day, and experienced the most unexpected relief. On the third day all his bad symptoms were gone. He had no pain, no vomiting, no sweats; his spirits were raised to the highest state of exhilaration, and he thought himself perfectly cured. He went out in the greatest joy, visited all his friends, and told them that he had at last got rid of his tormenting malady. In the evening he joined a supper party, indulged pretty freely, and next morning had a violent hæmatemesis, to which he had been for some time subject. All his old symptoms again made their appearance. He again had recourse to the acetate of morphia, and again immediately experienced relief, but the vomiting of blood again returned, so that he discontinued the remedy. This gentleman is now in the enjoyment of good health. He regulated his diet, left off all medicine by the mouth, used warm water injections, and thus recovered from his supposed cancer.

I do not bring this case forward as an instance of the curative effect of acetate of morphia, but as an instance of its powerful effect in allaying gastric irritation. I could adduce other cases in proof of its value in the treatment of the after stage of chronic gastritis, and particularly of that form in which pain and acidity are the prominent symptoms; but I perceive my time has nearly expired. At my next lecture, I shall give some other particulars connected with this subject, and then proceed to the consideration of diseases of the small intestine.

In speaking of the employment of counter-irritation in cases of chronic gastritis, I forgot to mention the use of friction with croton oil, which has been found beneficial in many cases of chronic inflammation. It has been exten-

sively used by many practitioners in the treatment of chronic affections of the joints, and in various forms of pulmonary disease; and I have employed it myself in some cases of chronic gastritis with benefit. I cannot say that the cases in which I have used it presented all the symptoms of chronic gastritis, but they were certainly cases of chronic gastrodynia, with severe local pain, nausea, and loss of appetite. It is an excellent counter-irritant, and gives very little pain. The mode in which I employ it is this,—take a few drops of croton oil, five or six, for instance, drop them on the epigastrium, and rub them in with a piece of lint or bladder, interposed between your finger and the skin, and the next day you have an eruption of small papulæ, which you can increase at will. There is one interesting circumstance connected with the use of croton oil frictions, which you should be made acquainted with. The liability to produce counter-irritation, seems to depend upon the absorption or non-absorption of the croton oil; if it be absorbed it will purge, but if it be not it will produce counter-irritation. In cases of this kind, therefore, where it produces the necessary degree of irritation in the skin, the chances are, that it will not act disagreeably by bringing on catharsis. I have only seen one case where there were both the eruption and catharsis. This was a gentleman who had lately suffered from dysentery in warm climates.

I may also mention, that in convalescence from an attack of chronic gastritis, you must pay great attention to diet for a long time, because there is no affection of any organ in the body, in which an error in diet so rapidly induces a return of the original symptoms, as in disease of the stomach, while each return of the disease renders the attack more dangerous and unmanageable, until at last disorganization takes place.—*Ibid.*, Feb. 1st and 8th, 1834.

31. *On the Use of Blisters.* By WILLIAM STOKES, M. D. [Extracted from Lectures on the Theory and Practice of Medicine, delivered at the Medical School, Park street, Dublin.]—It is a great error to think that blistering is a matter of course in inflammatory diseases, or that the proper period for their application should not be carefully marked. It is a common idea, that if a blister does no good it will do no harm; that it is probable some benefit may result from its employment, and that you may try it at all events. I need not tell you that all this is wrong, and that we must be guided by exact principles in this as well as in every other part of practical medicine. I am afraid there is a great deal of loose reasoning and empirical practice connected with this subject, even at the present day. Here is the general rule by which you should be invariably guided. No matter what kind of disease you have to deal with, if it be inflammatory, blistering in the early stage of it is decidedly improper. I might amplify this rule, and say, that if the disease be inflammatory and in its early stage, or, if, under such circumstances, the symptoms require the general or local abstraction of blood, blisters cannot be used with propriety. The truth is, that many persons take a very limited view of this subject; they look upon blisters as merely revulsive agents, which, by their action on the surface, have the property of diminishing visceral inflammation. This I am willing to allow is true to a certain extent, but there is abundant evidence to prove, *that blisters have sometimes a direct stimulant effect on the suffering organ.* That this occasionally occurs has been established by many facts in medicine; and I have not the slightest doubt, that the application of a blister over an organ in a state of high inflammatory excitement will certainly be productive of injurious consequences. But if you apply them at the period when stimulation is admissible and useful, (and there will always be such a period in every inflammation,) you then act on just principles, and will generally have the satisfaction of finding your practice successful. The greatest empiricism is sometimes practised in the application of blisters to the head in acute inflammation of the brain. You will see, in Mr. Porter's admirable work on the Pathology of the Larynx, how strongly he is opposed to the early use of blisters in acute laryngitis. Dr. Cheyne, also, may, among many others, be quoted in support of this doctrine.

If there is one system more than another likely to be injured by early blistering, it is the digestive. Broussais says, that blisters should not be applied in any of the stages of acute gastro-enteritis, and that in the early stage their application is the very height of malpractice. I do not go so far as to say that they should not be applied in any period of the disease, for when the skin is cool, the pulse lessened, and the local inflammation so far reduced as not to require the abstraction of any more blood, I think you may employ them with very considerable advantage. I shall again return to the subject of blisters; and will for the present merely remark, that blistering is almost always mismanaged, in consequence of persons who apply them being ignorant of their stimulating effects on organs. They generally allow them to remain on too long, and the consequence of this is often violent excitement of the organ over which they are applied, great constitutional irritation, strangury, and bad sores. The best mode of using them is to direct the person who prepares the blister to cover it with a piece of silver-paper before it is applied, and having put it on with the paper next the skin, to let it remain until a decided sense of smarting is produced, when it should be immediately removed. By adopting this plan, you will save yourself and your patient a great deal of inconvenience; you will have no strangury, stimulation of the whole economy, or excessive local irritation, and the inflamed surface will heal kindly. The mode, (too often practised,) of applying a blister sprinkled all over with an additional quantity of powdered cantharides, and leaving it on for twelve, twenty-four, or even thirty-six hours, particularly in the case of females, is nothing better than horse-doctoring. During a seven years' experience in the hospital at Tours, Brettonneau, by attending to this principle, never had a case followed by these troublesome symptoms, and yet he never failed in producing the necessary degree of counter-irritation. The active principle of cantharides, being soluble in oil, exudes through the silver-paper in sufficient quantity to produce the necessary effect on the skin, without exposing the patient to the risk of having too much irritation excited by the direct application of the blistering plaster to the cutaneous surface.—*Ibid*, January 25th, 1834.

32. *On Delirium Tremens*. [Extracted from Dr. STOKES'S Lectures on the Practice of Medicine.]—You have seen cases of delirium tremens, but you are not, perhaps, aware that it arises under two opposite classes of causes. In some cases, a patient who is in the habit of taking wine or spirituous liquors every day in considerable quantities, meets with an accident or gets an attack of fever. He is confined to bed, put on an antiphlogistic diet, and in place of wine or whiskey-punch gets whey and barley-water. An attack of delirium tremens comes on, and symptoms of high cerebral excitement appear. Another person, not in the habit of frequent intoxication, takes to what is called a fit of drinking, and is attacked with delirium tremens. In the first case the delirium arises from a want of the customary stimulus, in the second from excess. In each the cause of the disease is different; and consequently, with this view of the subject, it would be a manifest departure from sound practice to treat both cases in the same way. Yet, I believe, this error is frequently committed, even by persons whose authority is high in the medical world, and is part of a system not yet exploded,—*the system of prescribing for names and not for things*. The patient is treated for a disease which has been called delirium tremens, the present symptoms are only attended to, and the cause and origin of the affection are overlooked. What are the true principles of treatment?—In the first variety, where the delirium is produced by a want of the customary stimulus, there is no doubt that patients have been cured by the administration of the usual stimulants, by giving them wine, brandy, and opium. Indeed this seems to be the best mode of treating this form of the disease. But is it proper or admissible in the second variety, where the delirium is caused by an occasional excess in the use of ardent spirits?—Certainly not. Yet what do we find to be the ordinary practice in hospitals when a patient is admitted under such circum-

stances?—A man, who has been attacked by delirium tremens after a violent debauch, is ordered a quantity of porter, wine, brandy, and opium; and the worse he gets, the more is the quantity of stimulants increased. Now this practice seems to me as ridiculous as the old principle of treating a case of hydrophobia with the hair of the dog that bit. Let us consider what the state of the case is. A large quantity of stimulant liquors have been taken into the stomach, the mucous surface of that organ is in a state of intense irritation, the brain and nervous system are in a highly excited condition from the absorption of alcohol, or in consequence of the excessive sympathetic stimulation to which they have been subjected. Are we to continue this stimulation?—I think not. What would be the obvious and natural result?—Increased gastric irritation, encephalitis, or inflammation of the membranes of the brain. The supervention of inflammatory disease of the brain in delirium tremens is not understood by many practitioners, and they go on administering stimulant after stimulant, totally unconscious that they are bringing on decided cerebral disease. I have witnessed the dissections of a great many persons who died of delirium tremens, and one of the most common results of the dissection was, the discovery of unequivocal marks of inflammation in the brain and stomach. Broussais considers all such cases as merely examples of gastritis, and ridicules British practitioners for inventing “a new disease;” but in this he is certainly wrong, for there have been several cases in which no distinct marks of gastric inflammation could be discovered. In all cases, however, where the delirium supervenes on an excessive debauch, there is more or less of gastritis; and though it may occasionally happen, that a patient under such circumstances may recover under the stimulant treatment, yet I am convinced that the physician will very frequently do harm by adopting it.

This complication of delirium tremens with gastritis is also exceedingly curious in another point of view, as it illustrates how completely the local symptoms are placed in abeyance, and, as it were, lost during the prevalence of strong sympathetic irritation. The patient's belly will not be tender; the tongue may not be red; the symptoms present may be indicative of a mere cerebral affection, and yet intense gastric inflammation may be going on all the time, and all the appearances of cerebral disease be quickly removed by treatment calculated to subdue a gastritis. Is this all theory? No; for we have practised on this principle with the most extraordinary success in the Meath Hospital. We have seen cases of violent outrageous delirium subside under the application of leeches to the epigastrium, and iced water without a single drop of laudanum. I beg of you, if you meet with any cases of delirium tremens under such circumstances, to make trial of this mode of treatment, and record its effects, for it is important that they should be more extensively known. I have seen the whole train of morbid phenomena, the delirium, the sleeplessness, the excessive nervous agitation, all vanish under the application of leeches to the epigastrium. In some cases where after the sleeplessness and delirium were removed by this practice, and the tremors alone remained, we have again applied leeches to the epigastrium, and succeeded in removing the tremors also. On the other hand, where a stimulant plan of treatment was employed, and the patients died, we have most commonly found inflammation in two places, in the stomach, or in the brain or its membranes. The rule, then, is this,—in a case of delirium tremens from the want of a customary stimulus, use the stimulant and opiate treatment; but when it comes on after an occasional violent debauch, such remedies must be extremely improper. Adopt here every thing calculated to remove gastric irritation. We have facts to show that most decided advantage may arise from the application of leeches, even where the symptoms of gastritis are absent.—*Ibid.*

33. *On Mammary Abscess.*—Dr. BEATTY, of Dublin, in a paper in the *Dublin Medical Journal*, for January last, extols the controlling power of tartar emetic in this affection. On the accession of inflammatory symptoms in the breast, after

purging the patient, he administers the tartar emetic in doses of one-sixteenth of a grain, repeated every hour, so as to induce slight nausea. If vomiting is induced, the medicine is to be omitted for an hour or two, and its use then recommenced at longer intervals. In ordinary cases, after twenty-four hours, the pain and fever, Dr. B. says, are usually mitigated, and the breasts are smaller and softer. If these effects are not produced in that time, Dr. B. doubles the dose, provided the stomach will bear it, and it rarely happens that it will not, for Dr. B. says, that he has observed that in those cases which do not yield readily, the stomach is very patient of the medicine.

34. *On the Treatment of Porrigo Decalvans by Solution of Tartar.* By Dr. H. BEAUCHAMP.—Few affections more frequently baffle the skill of the medical practitioner, or give employment to the nostrum monger, than porrigo decalvans. Our author has some doubt as to the propriety of placing the affection in question in the genus porrigo, but does not stop to offer a new arrangement. He was led to try the effect of tartrate of antimony in this disease, from a conversation with his friend Dr. Carter, an army-surgeon of considerable experience, who had often succeeded with this remedy in restoring the growth of hair that had fallen off in consequence of acute diseases, the use of mercury, &c. The strength of the solution was five grains to an ounce of distilled water. Shortly after this conversation a young lady applied to Dr. B. complaining that her hair fell off from a particular spot of her head. On examination, this part was found to be slightly red, unlike what generally happens, and therefore he thought it proper to apply leeches in the first instance. After the second application the hair began to grow, and there was no necessity for the antimony. After several months the lady returned, with another bald part; but this time the skin was pale. Nevertheless he applied leeches, without any good effect. Afterwards he had recourse to the antimonial solution, which was applied three times a day. The hair grew again, and of the same colour as the rest of the hair.

The next case was that of a young lady from whose head the hair first fell off in spots, but in the course of five or six years, half the head had become bald, in spots, from the size of a sixpence to that of a half-crown. The antimonial solution was then employed, having the remaining hair shaved off. By mistake the solution was made too strong, and brought out a crop of pustules. When these had healed a soft down of hair was perceptible on the affected parts, but of a lighter colour than the remaining hair. The head was again shaved, and the solution of proper strength was ordered. But the anxious mother again applied a strong solution, which brought out a crop of pustules not only on the head, but over nearly the whole body, accompanied by febrile action requiring antiphlogistics. The fever subsided, and the pustules disappeared, except from the head, where the pustules coalesced and formed an immense scab, not unlike those of tinea capitis. The lady bathed in the sea during the summer months, had the head repeatedly shaved, and subsequently recovered completely, having the head covered with a uniform growth of hair.

Even these few instances deserve the notice of the profession, and further trial of the remedy.—*Med. Chirurg. Rev. from Dublin Journ. No. XII.*

35. *Neuralgia.*—M. ROUX, in a memoir in the *Bulletin Générale de Thérapeutique*, for 1832, strongly recommends the external use of the following lotion in neuralgia:—℞. Distilled cherry-laurel water, ℥iv.; Sulphuric ether, ℥j.; Extr. belladonna, ℥ij. M.

36. *Hydrophobia.*—M. BUISSON has written to the Paris Academy of Sciences, to claim a paper, which he forwarded so far back as 1823. The paper contained a case of hydrophobia, which was his own; the following is the report of it.

He had visited a woman, who had been suffering under symptoms of hydrophobia for three days. She had constriction of the throat, inability to swallow,

abundant secretion of the saliva, and foaming at the mouth. She had been bit by a mad dog forty days previously; she was bled, and died shortly afterwards.

M. Buisson, whose hands were covered with blood, incautiously cleansed them with a towel which had been used to wipe the mouth of the patient. He then had an ulceration upon one of his fingers, yet thought it sufficient to wash off the saliva that adhered with a little water. The ninth day after he was suddenly seized with a pain in his throat and eyes. The saliva was continually discharging into his mouth; the impression of a current of air, the sight of brilliant bodies, gave him a painful sensation; his body appeared to him so light, that he felt as though he could leap to a prodigious height, and experienced a wish to bite, not men, but animals and inanimate bodies. Finally, he drank with difficulty, and the sight of water was still more distressing to him than the pain in his throat. These symptoms recurred every five minutes, and it appeared to him as though the pain commenced in the affected finger, and extended thence up to the shoulder.

From the whole of the symptoms, he judged himself affected with hydrophobia, and resolved to terminate his life by stifling himself in a vapour bath. Having entered one for this purpose, he caused the heat to be raised to 42° , (107° $36'$ Fah.) when he was equally surprised and delighted to find himself free from all complaint. He left the bathing-room well, dined heartily, and drank more than usual. Since that time he has treated in the same manner more than eighty persons bitten, in four of whom the symptoms had declared themselves bad, and in no case has he failed, except in that of one child, seven years old, who died in the bath. The mode of treatment he recommends is, that the person bit should take a certain number of vapour baths, (commonly called Rousseau,) and should induce every night a violent perspiration, by wrapping himself in flannels, and covering himself with a feather bed, the transpiration to be favoured by drinking plentifully of a warm decoction of sarsaparilla. M. Bouisson declares himself so convinced of the efficacy of this treatment, that he will suffer himself to be inoculated with the disease, and as a proof of the utility of copious and continued perspiration he relates the following anecdote.

A relative of the musician Grétry was bitten by a mad dog, with many other persons, who all died of hydrophobia. For his part, feeling the first symptoms of the disease, he took to dancing night and day, saying *that he wished to die gaily*. He recovered.

M. Buisson also draws attention to the fact, that the animals in whom this madness is most frequently found to develop itself spontaneously, are dogs, wolves, and foxes, which never perspire.

37. *Tracheotomy in the Last Stage of Croup*.—M. TROUSSEAU, in an interesting paper on this subject, in the second number of the *Journal des Connaissances Médico-Chirurgicales*, states that there has come to his knowledge twenty-one cases of croup in which tracheotomy was performed in the last stage of the disease, and seven of them were saved, viz. five by M. Bretonneau, one by M. Bulliard, and one by himself. As in those twenty-one cases the operation was not performed until death seemed inevitable, and there remained no other means of safety, he thinks that it is the duty of a conscientious practitioner not to neglect a dernier resource, which finally leaves still some chance. The operation is easily performed, and rarely dangerous, he adds, since of the twenty-one cases operated on, not one experienced the least accident.

OPHTHALMOLOGY.

38. *Observations and Reflexions upon Amaurosis*, communicated by M. A. BERTON, First Assistant Surgeon to the Municipal Guard of Paris.—Richter assigns three orders of causes as operating in the production of amaurosis. The first

comprehends those which determine a plethora or turgescence of the sanguine vessels of the brain, retina, and optic nerve, which state he supposes produces a certain degree of compression of these organs. The second includes those causes which operate in debilitating the economy of the organ of vision alone. There is nothing, according to this author, that tends more certainly to enfeeble the forces of these organs than the fatigue incident to their exposure to brilliant objects, (the reflexion from a bright light for instance;) the absolute fixedness of vision necessary in the examination of minute objects, operates in the same way. He cites a case of a person, who, in being obliged to pass over a portion of country covered with snow, found himself suddenly attacked with amaurosis, and another in which the disease was occasioned by the patient having been exposed to the reflexion from a brilliant flash of lightning. Professor Beer is also of opinion that this class of causes operate in producing the disease. In the third order of causes are ranged all those irritations which affect in an inexplicable manner the optic nerve, rendering it insensible to the impression of light. Several of these irritations are supposed to have their seat in the abdominal viscera, whence they radiate, affecting the eyes sympathetically. In the true and simple amaurosis of Beer, we have only the vital properties of the optic nerve and retina affected, and the affection depends either upon an excess of vitality, or better, of sensibility of these nervous portions; or upon a debility of this vitality or sensibility. The first variety of this species of amaurosis always depends upon a determination of blood to the head and eyes, which exercises a manifest influence over the primary formation of the disease. All those circumstances, which tend to produce either general debility or debility of the eyes alone, are the causes more or less determinant of the second species. In the interesting clinical lectures of Dr. Lichel, published in the *Lancet*, (No. 64,) we are told, "that all cases of amaurosis, which are not symptomatic of the disease of some other organ than that of vision, (that is to say, that are not sympathetic,) may most generally be reduced to two classes, the one in which the disease depends upon the existence of an irritative or sanguineous congestion, or even an inflammation, either of the choroid membrane, the retina, or optic nerve; the other, where it is brought about by a paralysis more or less complete of the last mentioned nervous divisions." These explanations, and those given by most writers upon diseases of the eye, relative to the etiology of the disease, differ but little from each other. Considering them then, as being the most generally received as correct, we shall go on to the consideration of the following cases, and try to discover to which order of causes they are most strictly to be referred.

Observation 1.—The subject of this case was a young woman, aged twenty-four years, of a good constitution, possessing no traits of the lymphatic temperament, perfectly regular, enjoying at the time excellent health, and who had, moreover, never suffered from any indisposition. Jumping up suddenly one night, she placed herself at a window looking into a street, in which there happened to be a very bright light. All at once she experienced a very extraordinary sensation in the right eye, and was struck with surprise and terror upon finding that in a few moments the lid of that side involuntarily closed itself, and that vision in that eye was very imperfectly performed. Leeches, blisters, irritating frictions upon the temples, were all prescribed, but without producing the slightest amelioration in the symptoms. I was not called to the patient until about the fifteenth day after the occurrence of the attack. At that period the right lid was incapable of any motion whatsoever, and fell down over the eye as soon as the force applied to raise it was removed. It nevertheless retained its sensibility, and the slightest touch upon its surface was perceived. The eye looked outwardly, and its pupil was dilated and but slightly contractile. In the other eye, which was, moreover, in a perfectly physiological condition, vision was performed in a very imperfect manner, objects appearing as if seen through gauze. When examined with both eyes every thing appeared double. For some days past she had suffered from a slight cephalalgia located near the right co-

ronal region. The double vision resulted in this case from a deviation of the visual axis, and this deviation was dependent upon the disease being confined to but one eye. Richter considers strabismus as being the most certain diagnostic in amaurosis. Beer, who also considers this phenomenon as being usually present in similar circumstances, explains it by observing, that it results from the eye of the patient never resting or fixing itself upon an object. It seems to me, however, that we may, with at least as much propriety, refer the cause to the disease itself, or to an extension of it: in the first place, this phenomenon is never observed except in those cases in which amaurosis is incomplete, where certain portions only of the retina, (particularly the median,) have been attacked with paralysis. The other portions of this nervous expansion, still remaining sensible to the influence of the light, will instinctively turn towards the field of vision, in order to receive the impression of the luminous rays. According to another hypothesis, the strabismus results from a paralysis of some motor muscle of the eye, whereby a want of antagonism takes place. We can as easily conceive how one of the straight muscles may become paralyzed, as that the levator of the lid should lose its power of contracting. However this may be, I am of opinion that the preceding case should be referred to the second division of Richter. I recollect, in fact, similar cases that he has cited; among others, that of a person labouring under ecstasy, who, upon being exposed to the reflexions of light from the disc of the moon was attacked with amaurosis. Considering the youth and strength of the patient, as well as the insufficiency of the two or three previous leechings, I insisted upon a repetition of the sanguine emissions, and also the exhibition of revulsive remedies addressed to the intestinal canal. Having obtained no amelioration in the symptoms whatever towards the end of the eighth day, I thought it adviseable to change the plan of treatment, and accordingly prescribed such remedies as promised to stimulate or re-excite the sensibility of the nervous portions of the eye, and irritating frictions to the temples, forehead, and even to the lid itself, were employed; she was also ordered to take the pills of Meglin, to have a large blister applied to the nucha, and to take a vomit, (a remedy by the by I should have feared to prescribe had I supposed that the affection depended upon plethora of the vessels, as it would in such a case have proved hurtful, by determining a greater quantity of blood to the part diseased.) In less than a week a remarkable improvement in all the symptoms manifested itself; the lid opened of its own accord, and allowed the lower portion of the pupil to be seen, and the affected eye distinguished a little more clearly objects that were placed before it. She remained in this improved condition for some time, without any change for the better, and the progress towards a cure seemed to have stopped at this point. I determined after some days to employ the strychnine; I administered it at first in the dose of a fourth of a grain once a day, and augmented it gradually until she took half a grain night and morning. In ten or twelve days she was completely cured, the visual axes, (which had been daily approaching each other nearer and nearer,) became again perfectly parallel, and there remained neither in the appearance of the eye itself, nor in the performance of its functions, a single trace by which one would be led to suspect the previous existence of the disease.

Observation 2.—The second observation resembles very much the preceding, and was taken about the same time by Dr. Bodson, a relative of mine. The patient, a woman aged about fifty years, who had had several children, and with whom the critical period had passed only a few years, was attacked with amaurosis in both eyes, which came on gradually. When Dr. Bodson was consulted the disease had existed thirty-five days. The lids were closed and paralyzed, the right pupil slightly dilated, and vision imperfect, (objects appearing as if seen through a cloud.) The sight appeared much more confused on the side of the dilated pupil. She had been bled and leeches three times, twice behind the ears, and once upon the internal superior portion of the thighs. She had also used the foot-bath containing mustard, and had taken purgative medicines.

No benefit whatsoever had resulted from this treatment. M. Bodson ordered the superior coronal region to be shaved and blistered, and the other remedies to be continued. From the fourth day after the application of the blister, the lids began to open of themselves, though to no great distance, but several days having elapsed without further improvement, the purgative pills were replaced by some composed of the alcoholic extract of the nux vomica. From this period a daily improvement in all the symptoms took place, and towards the end of the third week a complete cure was effected. The lids having in fact recovered all their former facility of movement, and the sight becoming so perfect that the patient was enabled to resume her occupation with the needle. It would be useless for us to endeavour to demonstrate by means of new details, that which seems evidently to exist from facts already given, viz. that the two preceding cases of amaurosis are not similar in their character to those which depend upon a visceral affection, (sympathetic amaurosis;) nor to those which result from a congestion, irritation, or even an inflammation of the nervous organs essential to the eye, but that they depended upon a paralysis of the nerves, or nervous membranes of the organs of vision; a paralysis which, according to oculists, attacks in a manner more or less complete the optic nerve, the retina, or even the choroid coat itself. Let us observe that the trifacial nerve has not been mentioned, notwithstanding the experiments of Professor Magendie, (the results of which are published in his *Précis de Physiologie*,) show, 1st, that the winking of the lid depends in part upon the facial nerve, and partly upon a branch of the fifth pair, and that it ceases, or but very rarely takes place, after a division of the latter, and that it ceases entirely always when the facial nerve is divided; 2d, that the section of the optic nerve destroys vision entirely, and that a division of the fifth pair does not entirely destroy the sensibility of the retina, but that a small portion of it remains. From these physiological facts may we not draw the inference, that branches of the fifth pair are the nerves affected in incomplete amaurosis, if not always, at least in those cases complicated with paralysis of the eyelids, as was the case in the two preceding observations?

39. *Nutrition and Diseases of the Humours of the Eye.*—M. BOURJOT, in a memoir communicated to the Royal Academy of Medicine, has endeavoured to show that the formation and renewal of the humours of the eye are due to the action of endosmose and exosmose. The basis of his theory is, that the humours of the eye, having different densities, and being separated by delicate and porous animal tissues, a double current of endosmose and exosmose takes place. He believes that the aqueous humour passes by endosmose through the capsule of the crystalline; that the humour of Morgagni passes through the posterior parietes of the crystalline capsule in the meshes of the vitreous humour; and that this last finally penetrates the parietes of the veins which ramify over the surface of the hyaloid membrane. Finally, he applies this theory to the explanation of the diseases of the humours of the eye, to different cataracts, for example, that the density of these humours vary, consequently their proportions, their circulation changes, and different cataracts form.—*Archives Générales*, Oct. 1833.

SURGERY.

40. *Hydrocele cured by Tincture of Iodine.*—M. P. RECORD, Surgeon to the *Hôpital des Vénériens*, has employed the tincture of iodine with success in five cases of hydrocele independent of any syphilitic cause. The tincture of iodine is diluted with distilled water, and applied to the tumours by aid of compresses imbibed with it, and in which the scrotum is enveloped. M. Record employs the tincture in four different degrees of concentration:—1st. Tinct. iod. ℥j.; Aq. distill. ℥iij.; 2d. Tinct. iod. ℥ij.; Aq. distill. ℥iij.; 3d. Tinct. iod. ℥iij.; Aq.

distill. ℥iij.; 4th. Tinct. iod. ℥vj.; Aq. distill. ℥iij. In subjects whose skin is very delicate and epidermis thin, the last formula is employed. When there is less sensibility and some hardness of the tissues, the other formulæ are employed *pro re nata*. For the medicine to produce its beneficial effects, the patients must experience a rather vivid but supportable sensation of heat; and without there being burning or vesication, the skin of the scrotum must become brown, or pass into brownish-red, the epidermis becoming like parchment, and forming scales that are detached leaving beneath them a sort of thick transpiration still without vesication. So long as these results are not obtained the dose of the tincture of iodine must be increased, the quantity of distilled water remaining the same; but when these effects have resulted, the tincture of the same degree of concentration must be continued by steeping compresses in it and renewing them twice a day. If pain supervene, the application is suspended for a few days, and its use resumed until the disappearance of the tumour.—*Journal des Connaissances Med. Chirurg. Jan. 1833.*

41. *Resection of Bones in Ununited Fractures.*—Surgeons have long entertained an opinion with regard to the resection of bones in cases of ununited fractures, which M. DUPUYTREN considers as very injurious. They imagined it was absolutely necessary to cut out both fragments of the bone before a solid callus could be laid down; hence they avoided this operation in a great number of cases when this resection was extremely difficult if not impossible: thus, for example, they rarely had recourse to it in fractures of the femur, where the fragments frequently ride upon one another; the upper portion is the only one which can generally be got at with facility, while the inferior fragment, carried backwards and inwards, is too deep-seated to be exposed by an incision in this direction, while the presence of important vessels prevents any operation on the inner side of the limb. M. Dupuytren is inclined to hold this opinion as altogether wrong, and maintains that the resection of one fragment is sufficient to obtain the consolidation of both; at least two cases in which he employed this practice turned out successfully.—*Leçons Orales.*

42. *On the Use of the Trepan in Tooth-ache.*—The means generally employed consist in the destruction of the nervous pulp of the tooth by laceration, cauterization, or the application of caustic to the bottom of the carious tooth. Experience proves that it is only necessary to destroy the dental nerve to subdue at once all sensibility in the part. The means employed by M. FATTORI, and which experience has proved to him is the best to be relied on, consist in the application of a small trepan on the diseased tooth, after having conveniently fixed the head of the patient. A few turns of the instrument are sufficient to perforate the osseous tissue of the tooth, and the extremity of the trepan immediately divides the nerve which fills up the dental canal. The section made in this way immediately relieves the pain.

The operation, according to the old method of destroying the nerve with a sharp-pointed instrument, seldom succeeded, as the caries rarely allowed of the easy introduction of the instrument into its cavity, and that it was also impossible to divide the nerve in many cases completely, besides causing the patient very severe pain at the time. The operation by the trepan, on the other hand, may be always relied upon, and removes every difficulty in the section of the nerve, as it is applied immediately over the part which the nerve traverses, and is certain of dividing it. The application of heat to the part is not a sure remedy, as the cauterization must be very slight—it gives out heat rapidly, and when applied to the part has only sufficient heat to burn deeply. Some have advised the direction of a flame of hydrogen gas on the part, but it is not necessary to dwell long on the uncertainty of such an application. In using the trephine, there is no risk of wounding any parts of the mouth near the affected tooth; when its application to those which are situated far back, near the ascending ramus of the lower jaw, is facilitated by the use of a *speculum oris*. In using caustic to the teeth, its application cannot be confined to the seat of the injury,

and it spreads sometimes to the neighbouring healthy parts, causing and increasing irritation of the dental nerve, and sometimes an inflammation of the tissue of the gums. Nothing of this kind can happen in using the trepan.

This remedy may be used successfully in all affections of the teeth, from whatever cause they may arise; and whilst many other remedial means lead on to the loss of the tooth, the trephine preserves it, in immediately relieving the pain, and preventing its return.

M. Fattori has found the trephine particularly useful in that affection of the teeth which he denominates *internal caries*, where the part is extremely painful, without showing the slightest appearance of alteration in its tissue. It is in such cases that the patient, having borne the pain for a considerable time, consents to the extraction of the tooth, which in being done is frequently broken off, and the fangs, which are often very painful, remain in the alveolar process. When relief does not follow the application of the trephine, the pain which remains is frequently the result of antecedent inflammation in the neighbouring parts, requiring a particular treatment for its relief. It is adviseable after the operation to fill the aperture made by the trephine with lead, to prevent any portions of aliment or other foreign substance from lodging in it, and becoming a fresh source of pain, by irritating the newly-incised nervous surface. This, however, should not be done until some days after the operation, when the parts shall have lost all their sensibility, and the irritation of the neighbouring parts is subdued. The application of the trephine is useful when old stumps of teeth, which cannot be removed, become painful; and finally, it is exempt from all those accidents which attend the extraction of teeth.—*Archiv. Gén.*

43. *Treatment of Fractured Limbs, by Inclosing them in Plaster Moulds, &c.*—The eminent German surgeon DIEFFENBACH is in the habit of treating many cases of fracture, especially of the bones of the leg, by enveloping the limb, or only $\frac{3}{4}$ ths of its circumference with plaster of Paris, after it has been ascertained that the fractured extremities lie in normal apposition with each other. It is of advantage to leave the anterior part of the limb exposed, as we have thereby an opportunity of watching the progress of the cure, and of applying any local remedies which may be necessary, especially when the case is one of compound fracture.

The principle of Dieffenbach's plan, that of an unmoveable apparatus round the broken limb, has been adopted by many surgeons both of ancient and of modern times. It is to that glory of French military surgery, M. Larrey, that we are chiefly indebted for its establishment in present practice. In the Russian campaign, the method was most extensively adopted, and many a limb which had been fractured by gun-shot injuries, and had been thus treated, was found on the return of the poor fellows to France, to have knit together most admirably, although the dressings had never once been removed from the period of the accident.

Larrey's apparatus has also the great advantage of being composed of materials the most simple, cheap, and almost always at command; for all that is required is a quantity of linen, straw, eggs, camphorated spirits, and of cold lead lotion. The mode of its adjustment is little more complicated than the application of a common bandage; and when once secured, the member is comparatively safe, and the patient, instead of being condemned to repose for a lengthened period, may be permitted to rise on the third or fourth day, and move about on crutches. Whatever be the limb which has been fractured, there is little risk of the apparatus being disturbed, even by a long journey; and if the jolting of the carriage be painful or improper, there is nothing to prevent the simultaneous employment of suspension, as proposed by M. Sauter. But often this is not necessary; for in from twenty-four to thirty-six hours, after the apparatus has been applied, it forms a compact, coherent, and accurately fitting mould or case round the whole of the limb, so that no one part of it can be moved without the rest of the limb following the motion; thus all danger of

lateral displacement is securely guarded against. It may be supposed that it is less efficacious in counteracting the shortening of the broken limb than some methods of permanent extension; this may possibly be true, but when it is stated that, out of eight cases of fractures of the femur, six were cured, without any shortening of the extremity, the argument cannot form any very potent objection to the practice; and indeed the very fact of all the muscles of the limb being equably and strongly compressed, (for the apparatus should be made to incase the whole of its length,) subdues in a great measure their tendency to contraction, and therefore obviates the tendency of the bones to ride over each other.

But if the immoveable apparatus which we have so strongly praised, and which our readers will find described at length in the 3d vol. of Baron Larrey's *Clinique Chirurgicale*, and also in an admirable thesis published lately by his son, possessed no other advantages besides the one of permitting the patient to move about safely during the treatment of his fracture, we should deem this sufficient to recommend it to the notice of surgeons; perhaps a case in point will be received as the most satisfactory evidence of the benefits accruing from its adoption.

A man of healthy constitution was admitted into a hospital for a complete fracture of the bones of the leg, about two inches above the malleoli. During six weeks he was treated by the common method, but at the end of that time it was found that union had not taken place. The foot being considerably everted, M. Berard first brought it into its right position, and then retained it there by means of Dupuytren's splints for another month and a half; and although there had been no displacement all this time, there was still a complete failure of any bony union. The immoveable apparatus was now applied; and when this had become sufficiently firm and compact, the man was allowed to get out of bed and walk about the ward on his crutches, without ever putting the broken limb to the ground. After the expiration of six weeks a perfect cure was obtained.—*Med. Chir. Rev. from Archives Générales.*

44. *On Bony Union of Fractures of the Neck of the Thigh bone.* By Sir ASTLEY COOPER.—I find in a report of Le Baron Dupuytren's lecture, that he attributes to me the opinion, that fractures of the neck of the thigh bone, within the capsular ligament, not only "never unite, but that it is impossible they should unite by bone."

It is quite true that, as a *general principle*, I believe that those fractures unite by ligament, and not by bone, as do those of the patella and olecranon. But I deny that I have ever stated the impossibility of their ossific union; on the contrary, I have given the reason why they occasionally may unite by bone.

The following are my words—"To deny the possibility of their union, and to maintain that no exception to this general rule may take place, would be presumptuous."

I then proceed to state, that the cause of the deficient union is to be found in the reflected ligament of the cervix femoris being torn through, and that thus a defective nutrition of the head of the bone is produced. But I held, that if the reflected ligament remained whole, or was but slightly torn when the bone was broken, it would unite by means of its cancellated structure; but that in such a case the limb would not be shortened in the usual manner, nor would the case have the common characteristics of this accident.

In proof of the truth of these observations, I shall give the following quotation from Mr. Swan's work on the Diseases of the Nerves, page 304.

"CASE.—Mrs. Powell, aged above eighty years, fell down in the afternoon of the 14th of November, 1824. I saw her soon after, and found her complaining very much of pain in the left hip. The limb could be moved in every direction, but this motion produced excessive pain. She lay on her back, with the limb extended; and nothing *was ever done*, except the application of fomentations for the first few days. I believed there was a fracture of the neck of

the thigh-bone, although the limb remained quite as long as the other, and I neither perceive a crepitus, nor any altered appearance in its position, except a slight inclination of the toes outwards. She had more constitutional irritation than I ever observed from a similar accident. She suffered much pain in her hip and was in consequence obliged to take an opiate; but she got very little rest. She generally had much thirst. There was the utmost difficulty in keeping her bowels open; and she had great pain and difficulty in making water. She had no appetite for common food, and for three weeks appeared so weak, that she was under the necessity of taking wine and brandy. For some time all her urine and stools were passed in bed, but not involuntarily, and only because she could not be persuaded to use proper means; in consequence, her back became very sore. Latterly she complained of pain in the abdomen, which was very tender on pressure, and made even the weight of the bed-clothes inconvenient. Her tongue became very dry and brown; and in the last twenty-four hours she was insensible. She died on the morning of the 19th of December, about five.

“*Examination.*—This took place at seven in the evening.

“There was some ecchymosis amongst the muscles about the injured part, and in the cellular membrane, about the sciatic and anterior crural nerves. The greatest part of the fracture of the neck of the thigh-bone, which was entirely within the capsular ligament, was firmly united.

“A section was made through the fractured part, and a faint white line was perceived in one portion of the union, but the rest appeared to be entirely bone.” Mr. Swan goes on to say, “This beautifully shows the principle which Sir Astley Cooper has advocated—viz. that when the reflected ligament remains whole, and the bones are not drawn asunder, the nourishment to the head of the bone continues, and union will be produced even in the short space of five weeks, by only placing the knee over a pillow, and in other respects leaving the case to nature.”

Of the contrary state of the fracture—viz. that in which the reflected ligament is torn—I may give the case sent to me by Mr. Robertson, of Sheerness, in which the patient's limb was extended for six months without any ossific union.

On the 25th of June, 1822, William Durain, aged 62, a tall, athletic convict, of a sanguine temperament, fell, with a very inconsiderable violence, across a piece of timber in the Dock-yard, his left hip coming in contact with the wood. On rising, he felt an acute pain in the region of the acetabulum, but no other inconvenience, for he walked on board to exhibit himself to the surgery-man. From finding him ranked up with the sick of the hulk, on my morning visit of the 26th, from his walking on board, and from his own account of the accident, I did not suspect any serious injury to the joint, and treated the case as one of concussion. On the 29th, however, he complained of a very sudden and very agonizing accession of pain, which induced me to subject him to a more critical examination. No evident alteration in the size of either hip could be discerned, but a shortening of the limb was conspicuous, which was rendered more evident by making him stand upon the sound limb: extension removed this difference; but, on being freed from restraint, it again assumed its morbid shape; the knee and foot were everted, and rotation greatly increased his pain.

I removed him to the hospital, as a case of fracture within the capsule; but a continued attention for a period of six months to position, (chiefly with a view of restraining the motion of the pelvis, and of securing the limb,) made no other alteration in the symptoms than a gradual diminution of pain: a pair of crutches were given him, he was placed on the invalid list, and remained till the 26th of September, when he died from general dropsy. On dissection, the injury proved a transverse fracture of the head of the femur, within the capsular ligament; no species of union had taken place. The upper portion of the fractured bone was retained in situ, by the sound ligament, tolerably smooth upon its surface, but without any ossific deposit.

The lower portion was very irregular, with several detached pieces of bone
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adhering to the insertion of the capsular ligament. Between the acetabulum and the portion of bone retained in situ by the ligament, were several small oval-shaped, loose cartilaginous substances, apparently fragments of bone; the capsular ligament partially lacerated, in a line above the trochanter major, and greatly thickened in its insertions.

I should not have given you this trouble, nor should I have taken it myself, but for the respect I bear my friend the Baron Dupuytren; for, although I have already submitted myself to be misrepresented by many individuals, yet I should be sorry to be misunderstood by so excellent a surgeon, and so valuable a friend, as le Baron Dupuytren.—*Medical Gazette, April 25th, 1834.*

45. *Amputation with a Single Flap.*—Dr. LEGROS recommends for amputations of the thigh and arm the following method, which he conceives to unite the advantages of the flap and circular operations without having the inconveniences of either. The patient and assistants being conveniently arranged, the surgeon grasps with one hand the muscles on the anterior face of the thigh, draws them from the bone; with the other hand he thrusts a knife held flat entirely through so as to separate these muscles from the bone, and forms a semilunar flap of six or seven inches. The operator carries back his knife to the bottom of the flap, which is raised by an assistant, divides the flesh which remains posteriorly, as in the circular method, and saws the bone, rounding if he thinks necessary its upper and lower edge.

Instead of commencing the flap by a puncture, and cutting from within outwards, the operation can be performed by an incision from without inwards, that is, from the skin to the bone.

The single flap may be cut square: if these measures are well taken nothing is easier than to make the lips of the wound meet perfectly.

This plan, as may readily be conceived, may be applied to the arm, however we prefer for this limb the circular method. Without regarding the facility and quickness with which this new plan may be practised, it appears to us to present the following advantages.

The flap unites by its own weight and facilitates by its position union by first intention, which by this manner can be very soon obtained.

The bone placed in the middle under a very considerable portion of flesh, does not tend, as in other methods, to project at the angles of the wound.

The angle being at the lowest point, the fluids flow out of their own accord, and by the most direct passage.

In case of hæmorrhage it is sufficient to raise the flap to discover the vessel from which the blood proceeds, and to twist or to tie it. The principal artery is found at the internal angle, and on a level with the wound.

By this method we avoid the conical form of the stump, the projection and exfoliation of the bone, the dragging caused by the dressings, and the search for the vessels which bleed primarily or secondarily.

The contraction of the stump, separation and gangrene of the skin, are not to be feared, and of phlebitis there is little chance whether originating from inflammation of the veins or the absorption of pus—the surface of the wound being protected from external causes.

The cicatrix in this method is linear, is not in the centre of the limb, it is beyond the reach of external injuries. This position, together with the muscular mass which forms and terminates the stump, facilitates the application of an artificial limb.—*Journal des Connaissances Med. Chirurg. February, 1834.*

46. *Case of Osteo-sarcoma of the Left Upper Maxillary Bone, in which the whole of the Diseased Bone was Removed.* By M. BLANDIN. [Reported by M. Laplace.]—The subject of this operation was a female, fifty-five years of age, habitually healthy, and the mother of several children, who enjoy good health; she affirms that she never contracted syphilis, and traces the commencement of her disease to six months back. At this period one of the left upper molar

teeth became spontaneously the seat of excessive pain, loosened, and in a short time fell out, leaving an opening which never closed since. At the same time two small fleshy tumours, as large as a pea, red, and smooth, developed themselves on either side of the fistula, which gave issue to a small quantity of puriform mucus, fetid, and sometimes mixed with blood. A surgeon being now called upon, made some trifling incision, which gave issue to some blood, and from that day the tumours gradually enlarged.

On being received into the hospital, 11th of March last, she presented the following appearance:—At the roof of the mouth there was a red, smooth, fungous tumour, but it was not ulcerated, and did not bleed; this tumour comprehended the whole breadth of the left upper maxillary bone, and occupied from before backwards the alveolar ridge and vault of the palate as far as the insertion of the velum palati. The whole alveolar ridge had disappeared, and was confounded with the body of the tumour, which was as large as the half of a hen's egg. Corresponding with the presumed situation of the second or third molar tooth there was an opening, furnishing a sanious, fetid pus, through which a probe might be passed deeply into the antrum. The left cheek was elevated by the tumour, which seemed to mount up to the base of the orbit in front, and to the side of the nose laterally. The globe of the eye on this side was not displaced; the patient experiences great intermitting pain in the tumour, and has been affected with head-ache, though not laterally; she coughs a little, and expectorates mucus mixed with pus from the alveolar fistula; the general health was not altered.

During the following days the little finger could be introduced into the maxillary sinus through the fistula, and feel some irregular, but smooth fungosities in the interior of that cavity, not a single point of its parietes presented the osseous resistance characteristic of a healthy state; the examination was followed by a discharge of blood; the progress of the tumour latterly had been very rapid; it had exceeded the median line to the right, and gained the inner edge of the right superior maxillary bone.

MM. Marjolin and Blandin, seeing the quick manner in which the osteosarcoma advanced, were of opinion that complete removal of the whole superior maxillary bone was necessary, and on the 18th of March, M. Blandin, in the presence of several surgeons, proceeded to the operation.

The patient was retained in a chair by two assistants, and the operator placed himself before her, having on his left all the necessary instruments arranged in perfect order, and under the care of another assistant. The left half of the upper lip was put in a state of tension between the left hand of the operator and an assistant, and an incision was made, commencing over the *os malæ*, below and outside the external angle of the eye, and dividing the upper lip two or three lines in front of the left commissure. The coronary branches were now tied, and the threads cut close to the knots. The external flap, sufficiently dissected back to expose the anterior edge of the masseter muscle, was committed to an assistant; the internal flap was also dissected from below up, and from without inwards, the wing of the nose was separated from the maxillary bone, and turned up; the corresponding nasal fossa opened in front, outside and below; the perpendicular process of the superior maxillary bone, and the base of the orbit, were exposed. The globe of the eye, with its cellular tissue, separated from the floor and inferior angles of the orbit, was pushed up by a spatula.

During this first period of the operation, the soft parts alone were interested; it now remained to separate the hard parts. The globe of the eye was carefully elevated inwards, together with the internal flap, while the external one was depressed in the opposite direction; a small hand-saw was now placed on the middle of the articulation of the superior maxillary with the malar bone; the flat of the blade being parallel to the median line, and directed from before backwards, regarded the anterior extremity of the inferior orbital fissure in such a manner, that the anterior angle of the *os malæ* was on the inner

side, and the malar process of the superior maxillary bone on the outer side of the cut.

The anterior moiety of the osseous mass placed in front of the inferior orbital fissure being thus divided, the separation was continued as far as the latter fissure, with the gouge. As the instruments were now to be directed against the inferior and inner edge of the orbit, the globe of the eye was raised outwards, and the internal flap turned to the right side. The saw being fixed on the external face of the ascending process of the superior maxillary bone, divided it obliquely from above, downwards, and from without inwards, in an oblique direction, passing through the superior external and inferior internal angles of the orbit, and directed from before backwards toward the posterior third of the spheno-maxillary fissure. The ascending process having been thus divided by the saw, the separation of the bone as far as the spheno-maxillary fissure was completed with the gouge, following precisely the ethmoido-maxillary fissure of the orbit.

The osseous portion which was to be amputated being thus separated superiorly both on the outer and inner sides, still remained attached behind the tuberosity of the maxillary bone, at the vault of the palate and the wall of the nasal fossæ. The internal flap being raised sufficiently, together with the upper lip, the left index finger was introduced deep into the mouth, which was kept open by means of a cork; the finger served to protect the velum palati, and to direct a long strong pair of scissors, which were introduced from before backwards through the nasal fossæ, each fossa receiving a blade; the septum was thus divided parallel to its base, where the vomer is very thin.

The necessary number of teeth were now extracted, and the bistoury traced on the gum and roof of the palate the line which the saw was to follow. This instrument divided the superior alveolar edge parallel to the median line, and from before backwards. The section was completed with the gouge, by which the osseous portion of the roof of the palate was divided in its whole length. The left moiety of the velum palati was now separated from the rest by means of a transverse incision, which, passing along the posterior edge of the horizontal portion of the palatine bone, was directed between the pterygoid process and the maxillary tuberosity. The soft parts being thus divided, the gouge was employed to separate the superior maxillary and palatine bones from the sphenoid, acting obliquely from above downwards, and from without inwards. The tumour was now completely isolated, it could be seized between the fingers, and when all the soft parts were cut through, its removal was terminated.

The result of this operation, in which the internal pterygoid muscle was completely exposed, was the formation of a vast cavity where the left orbit, nasal fossæ, the pharynx, and mouth, all communicated. The parts were now cleaned with a sponge, and some fragments of the orbit and palatine bone, with some fungous excrescences, were removed; the edges of the wound were now brought together with eight strong pins, on which the twisted suture was placed; the cheek did not present any sensible depression.

The consequences of this difficult and long operation did not present any thing remarkable, the termination being most fortunate; there was very little reaction, whether general or local; neither hæmorrhage nor nervous symptoms supervened. During the first few days the patient expectorated some mucus, at the beginning mixed with blood, but soon becoming yellow. On the 21st we observed over the upper eyelid and left cheek a little redness and œdema, but these were quickly dissipated. The patient, whom we could not comprehend at all at first, was soon able to make herself well understood, though the voice was nasal. Finally, she was able to leave the hospital in the beginning of May, when she presented the following appearances:—

On the cheek a simple cicatrix. In the cavity of the mouth, a sort of perforation of the velum palati, establishing a communication between the mouth and nasal fossæ, permits us to see the septum and turbinated bones. This artificial perforation is limited in front by the cheek; behind by the left moiety of

the velum palati; its edges are completely cicatrized. The left cheek is a little fallen in, and the left wing of the nose, being drawn closer to the septum than natural, diminishes a little the nostril of that side.

The examination of the tumour which was removed, perfectly confirmed the diagnosis; it was composed of true osteo-sarcomatous tissue, by which the greater part of the bone had been destroyed.

This case of complete removal of the whole of the superior maxillary bone, joined to a few other authentic ones which are recorded within the last years, proves that this operation, though in appearance dangerous and frightful, must take its rank amongst the other great efforts of the art to remove a disease otherwise inevitably mortal.—*Lancet*, May 31st, 1834.

MIDWIFERY.

47. *Destruction of the Neck of the Uterus, with complete absence of the Os Uteri. Vaginal Cæsarian Operation.*—Complete obliteration of the os uteri at the moment of labour is very rarely witnessed by accoucheurs. We find, indeed, in writers, many examples of the kind; but in most of these cases the observer has been led into error by a vicious or elevated position of the neck, which sometimes exists to such an extent, that, without very careful examination, an absence of the uterine orifice might be declared. In the present case, however, the fact of obliteration was established by several celebrated midwifery practitioners, and existed to a degree requiring the vaginal operation, which was performed with complete success.

Case.—On the 4th of December, 1833, Dr. Caffé was called upon by Madame Mauray, sage-femme, to see a lady who had arrived at her establishment the night before, and was at the full period of gestation. This lady, thirty-nine years of age, and of a good constitution, was the mother of three children, all born by easy labours. Her last accouchement took place eight years ago, and gave rise to no accident whatever. The labour-pains had been present for thirty-six hours, without having produced any serous discharge; and the midwife was unable to discover the presence of the os uteri, or even the entrance of the organ.

On making an examination, M. Caffé recognised the following particulars:—The vulvo-uterine diameter of the vagina measured five inches; its superior wall, excessively tumefied, formed a kind of hood which filled a part of the vaginal cavity; the latter was red, and not moistened by mucus; the apex of the vagina terminated suddenly, and might be compared to a cylinder closed above, without any trace of projecting body or uterine neck. Near the median raphe of the posterior wall, the finger touched a fold, about a line broad, giving the sensation of a small cord drawn tensely; but at the sides of this fold, or elsewhere, it was impossible to find the least trace of os uteri, either with the finger, or by guiding a probe-pointed stylet on the latter. During the violent expulsive efforts which took place from time to time, the pulp of the finger experienced the sense of motion communicated to it; but the uterus at the same time remained elevated, without projecting into the vagina.

MM. Hatin, Velpeau, Lenoir, and Larchet, were now called upon to examine the case, and all recognised a complete obliteration of the uterine orifice; an operation was therefore determined upon, and performed in the following manner.

The woman being placed on the edge of her bed, as in the operation for the stone, M. Caffé introduced, on the left index finger, a straight narrow-bladed bistoury, protected by a roll of linen within six lines of its point, and guarded by a ball of wax. Having arrived at the summit of the vagina, the direction of the bistoury was changed from the flat to the perpendicular position, its back being supported by the pulp of the index; and the anterior wall of the uterus

was divided, layer by layer, the incisions being made from the rectum towards the bladder, and care being taken not to extend them beyond five lines upwards. When the incisions had been carried to about one-quarter of an inch in depth, the operator arrived at the cavity of the uterus; a very dark, inodorous liquid, about four ounces in quantity, was immediately discharged.

The uterine contractions aided much the divisions made by the bistoury, and in order to avoid any danger of laceration, two lateral incisions were made with a probe-pointed bistoury, one on the right and the other to the left, extending a few lines only; at this moment a contraction of the uterus enlarged the crucial incision thus made and rendered it oval. After the lapse of an hour the labour was terminated, most fortunately, and without any laceration whatever. No foreign substance of any kind was introduced into the wound: the female was able to leave her bed on the sixth day, and on the ninth returned home.

After the cessation of the lochia, M. Caffé took the precaution of introducing on several occasions, into the wound, a gum-elastic catheter, which was there retained for a few hours each time, in order to prevent its closure. This precaution was attended with the desired effect, for since the performance of the operation, the menses have appeared twice, and been discharged without any obstacle. The cause of the obliteration in this case arose from the introduction of an irritating matter into the organ. M. Caffé was informed by the patient, that during the early months of her pregnancy, she had frequently injected, with a gum-elastic tube, a solution of ashes into the vagina, and even into the uterus. Each time this manœuvre was performed, the woman was seized with intolerable pain, and the injections gave rise to a discharge of pus from the vagina, mixed with some pellicles. The woman did not complain of any pain during the operation, which was extremely simple, and followed by no accident or inflammatory symptoms; and the division of the uterine parietes did not give rise to the slightest hæmorrhage.—*Journal Hebdom. March, 1834.*

48. *Case of Accumulation of Air in the Uterus simulating Pregnancy.* By J. JONES of Gelly, Montgomeryshire.—On the 3d or 4th of April, I was applied to by a widow, accompanied by her daughter, an unmarried female, nineteen years of age, under the following circumstances:—The mother stated that her daughter's health had been gradually declining for some months past, that she was suspected to be pregnant, and that she, (the mother,) wished me to decide whether she was so or not. The girl, who was of a naturally robust constitution, presented the appearances of impaired health. She was considerably emaciated; her countenance was sallow; tongue furred and white; pulse 84, and extremely small. She said that she had frequent vomitings in the morning, anorexia, and constipated bowels. She attributed the commencement of her illness to her having been suddenly exposed to cold and wet during menstruation six months previous; the catamenia were suppressed, and had not since appeared. About three months after this period she first perceived her abdomen to be preternaturally enlarged, and this enlargement had progressively increased up to the time of her application to me. It was then of the ordinary size of that of a female in the seventh, or the latter part of the sixth month of pregnancy, and the uterus was distinctly felt to reach as high as the umbilicus. I applied the stethoscope to various parts of the abdomen, but no sound was discernible, having the slightest similarity to that of the placental or fœtal pulsations. The mammæ were flaccid, and the areolæ surrounding the nipples wanted that deep red colour which is so characteristic of pregnancy. A vaginal examination was positively refused; and under all the circumstances of the case, I felt incompetent to form any decisive conclusion, whether the girl was pregnant, or laboured under some uterine disease.

After the lapse of three days I was again visited by this young woman, when, to my astonishment, I found the abdomen was reduced to its natural dimensions; the uterus was no longer to be felt above the pubis, and her health, she said, was much improved, her general appearance, indeed, very clearly proving

this to be the case. The account she gave was, that on going to bed the first night after she had applied to me, she suddenly, to use her own expression, felt something burst in her inside, and instantly a profuse quantity of extremely fetid gas issued *per vaginam*, mixed, however, with a few small clots of blood. The flatus, she said, must have continued to discharge for at least two minutes, when she felt faint, and subsequently became quite insensible. The mother corroborated the testimony of her daughter, and stated such to have been the fœtor of the gas expelled, that she found it impossible to remain in the same apartment with her daughter.

I much doubted the truth of this narration, and suspecting that abortion had taken place, I determined to prevail on the girl, if possible, to allow me to make a vaginal examination, and after a great deal of persuasion, succeeded, when I instantly found that the vagina was entirely closed by the hymen, with the exception of a small orifice, certainly not half an inch in circumference, through which the catamenia had escaped,—a strong proof that the girl had never indulged in illicit intercourse with the other sex, and coupled with the other circumstances of the case, that the testimony of her and her mother was faithfully true. The girl, after this occurrence, rapidly regained her former health. The catamenia have once since appeared, and she is now, in every respect, perfectly well.—*Lancet*, May 31st, 1834.

49. *On the Impediments to Easy Delivery, from some Malformations of the Fœtus.*—It has been too generally admitted, that those monstrosities only which are characterized by an excess or redundancy of parts, or by extreme malposition of these, can afford any real impediment to the expulsion of the child. A few examples will prove that this affirmation is not quite correct; but it will be proper, before particularizing them, to make an illustrative remark or two.

1. If the limbs of the fœtus be so wasted away, or so imperfectly formed, that they look rather like stumps, or like turtle-flappers, than like the ordinary lengthened extremities, the fœtus is necessarily more moveable in the liquor amnii, and must, in consequence of this, be more liable to a mal-presentation.

If, in such a case as this we have supposed, we should wish to deliver the child by turning, our diagnosis of the parts which we fell may very probably be obscure and perplexing—add to which, there may be no convenient part to lay hold of. It was in an example of this kind, that Pen was obliged to apply the crotchet upon the sacrum, and Delamotte confesses that he was once exceedingly puzzled to distinguish the different parts of a monstrous fœtus.

2. In anencephalous monsters, whose spine is found open behind, the head is usually thrown backwards, and the occiput is actually concreted with the cervical vertebræ. Such a malformation must seriously impede delivery, (if the fœtus be moderately large,) as the whole body is thereby an unpliant mass. Fortunately, these monsters are seldom carried the full time; but, even at the eighth month, they very commonly cause a tedious and painful accouchement. It is frequently necessary to effect the delivery by turning.

There are many other deformities of the fœtus, which may be unfavourable to the naturally easy expulsion of the child; such are adherences of the limbs to each other, or to the body, or of the fœtus to the secundines, (an anomaly which is frequently associated with some malformations of the fœtus itself, as eventrations, &c. and which Geoffroy St. Hilaire considers to be, indeed, the cause of the malformations,) or, lastly, an abnormal agglutination, or torsion of the navel-string. The mere death of the fœtus has been very generally supposed to render a labour less easy; and indeed the ancients believed that the expulsion was effected chiefly by the efforts of the child itself. To a certain extent, we must confess, this idea is correct; for there can be little question but that the death of the fœtus, by disturbing or arresting the utero-placental circulation, must have the effect of impairing the contractility of the womb, and should putrefaction have commenced, so as to render the flesh soft, loose, and inelastic, the fœtus must act almost as a plug, filling up the passage, and merely, per-

haps, protruded by the violent contractions of the expelling organ, without any power of accommodating itself to the different turnings. When the body is in this soft state, it does not well transmit the impulsion communicated by the uterus to the head, but often rather bends or folds upon itself, and thus presents an unfavourable part to the os uteri—a part which is very rarely protruded first in a living child. The analysis of obstetrical tables will be found to corroborate this statement. Out of 15,652 births, at the Hospice de la Maternité, 689 children were still-born—of these 689, 539 were in a putrid state, or in the proportion of 7 to 9. The following exhibits the mode of delivery in these cases:—

Born spontaneously	- - - - -	{	{by the vertex }		514
			hips . }		
			face . . .		3
Delivered with the forceps	- - -	{	shoulder		4
			vertex . .		5
Delivered by turning	- - - - -	{	forehead		1
			vertex . .		7
Delivered after craniotomy	- - - - -	{	shoulder		3
					2
					<hr/> 539

According to this table, it appears that, in one case out of every eighteen in which the fœtus was putrid, recourse had to be made to the use of the hand, or of instruments, to effect the delivery; whereas, in the labours of living children, the proportion is a great deal lower—once in about 60 cases.

To illustrate the remarks on the occasional impediments to natural accouchement, from some malformations of the fœtus, we shall adduce an example or two.

OBS. 1. *Anencephalous Fœtus, born easily and naturally.*—A woman, 31 years of age, was admitted into the Maternity to be delivered of her fourth child. During her pregnancy, she had suffered much from cardialgia and anorexia; when admitted, the membranes had already broken and the waters freely discharged, but the labour-pains did not come on for a few hours afterwards. When the os uteri had dilated sufficiently, the presenting part of the fœtus could not be satisfactorily made out—it felt quite soft, and was at first supposed to be the genital organs, but the hips could not be traced; and, by continuing the examination, one of the arms was felt.

As the labour proceeded, the soft mass was protruded lower down, and in the middle of it, the accoucheur thought that he could feel a sort of opening, which received the extremity of the finger. The expulsion was gradually effected. On examination after delivery, it was discovered that the tumour was a large reddish fungosity which covered the entire base of the cranium, and occupied the place of the brain. The fœtus was malformed in other respects, for the anus was imperforated, and there were no traces of external genital organs; there were also only four toes on each foot.

OBS. 2. *Anencephalous Fœtus, presenting the Shoulder—Delivery by Turning.*—A middle-aged woman, pregnant of her second child, was seized with labour-pains in the eighth month. The pains had been preceded by hæmorrhage, and when the state of the parts was ascertained by “le toucher,” it was found that the placenta adhered to the os uteri: higher up a hand could be felt, and, by following this, the forearm and arm might be traced; the fœtus was still alive, but very small—the delivery was effected by turning. The fœtus was monstrous, for the cranium was altogether destitute of its vault, and, in the place of the brain, nothing was to be seen but vesicular fungosities, full of serosity. It lived for a moment or two after its expulsion, but never breathed.

General Remarks.—It is important to observe that, independently of the more frequent malposition of a dead, than of a living fœtus, we have oftener the necessity of employing instruments in the one case than in the other; the fore-

going table shows that this happens about once in 38 dead labours, even when the presentation is quite normal. If the data of other institutions agree with those furnished from the Maternité, the conclusion of the ancients, previously alluded to cannot be gainsayed; and, at all events, we must admit that a living fœtus is more favourable for easy expulsion than a dead one. But, in truth, the idea, although ridiculed by Petit, and by most subsequent accoucheurs, is not a whit more improbable than a favourite one of late years, we mean that which attributes the ordinary presentation of the head to an instinctive, and, in some degree, a voluntary effort or culbute of the fœtal being to direct its head foremost.

M. Paul Dubois read a very ingenious paper on this subject to the Royal Academy, (of which an abstract is given in a late No. under the head of the Proceedings of the Institute,) but his reasonings are often fallacious, and many of the data on which they are founded are not correct. The great frequency of malpresentations in cases of deformed fœtuses cannot surely be attributed to the feebleness of the instinctive and spontaneous effort of the fœtuses, but depends much more probably on their excessive mobility in the liquor of the amnion, monsters being very generally smaller, and occupying less space than healthy children. Whenever the fœtus floats about freely in the uterus at the time of labour, the chances of malpresentation are much increased; and as it is only in the latter months of natural pregnancy that the fœtus occupies nearly the whole of the cavity of the uterus, and as the head is at this period heavier, although by a very small excess of preponderance, than the rest of the body, the reason of the most common, and therefore the natural presentation is sufficiently obvious. We do not however mean to deny in toto, the occurrence of any instinctive movements of the fœtus in utero, for we believe that they do take place, and moreover that their frequency is in proportion to the inconvenience and constraint of the position in which the fœtus chances to be placed, but these movements must be blind, and obedient much more to the operation of mere gravity than to the choice or the will of the young being. Within this limit we consider its instinct to be comprehended, that it endeavours to resist any painful or disadvantageous position, say, for example, the presentation of the face, (a presentation which is much more frequent when the child is dead, than when it is alive; the proportion being as 5 to 97;) and simply because certain muscles are thereby forcibly and distressingly extended; in consequence of this the living being struggles against it.

But surely this admission does not warrant us in saying that the fœtus instinctively chooses the position most favourable to its birth; with as much propriety we may suppose that it voluntarily turns round the occiput, so as to bring it under the symphysis pubis, during the second act of parturition; all that we can fairly infer is that it strives against any position or attitude which is painful or irksome. The ingenious doctrine of M. Dubois would therefore be more correct if it simply enounced "that the child contributes by its automatic movements, to the gliding of the head towards the most depending part, which is the cervix of the womb."—*Med. Chirurg. Rev. from Rév. Méd.*

MEDICAL STATISTICS.

50. *Statistic Views of the Mortality in Various Countries in Europe.*—An article under this head in the *Edinburgh New Philosophical Journal*, for April 1834, conducted by Professor Jameson, exhibits an interesting view of the proportional mortality in the principal European states, the difference in which is very considerable. The computations profess to be founded upon official documents obtained in late years, and the following comprises a summary of the most interesting results, which will constitute a valuable addition to the stock of medical statistics with which the pages of the *American Journal* has been enriched.

The proportion of deaths to the population in the Roman territory and the

ancient Venitian provinces, is 1 inhabitant in 28; in Italy generally, Greece, and Turkey, 1 in 30; in the Netherlands, France and Prussia, 1 in 39; in Switzerland, the Austrian empire, Portugal and Spain, 1 in 40; in European Russia and Poland, 1 in 44; in Germany, Denmark and Sweden, 1 in 45; in Norway, 1 in 48; in Iceland, 1 in 53; in England, 1 in 58; in Scotland and Ireland, 1 in 59.

It hence appears that the shortest duration of life does not correspond with the greatest rigour of climate. Norway, Scotland and Iceland, being much more favourable to the prolongation of life than the milder regions of southern Europe, where three deaths take place in the latter, scarcely two occur in the limits of ancient Scandinavia.

“Russia and Poland, where nature and fortune have not been lavish of the necessaries of life, enjoy however, an astonishing longevity. The population, comprising a mass of nearly sixty millions, spin out their existence almost one-half longer than that which is enjoyed by the inhabitants of Italy, and exactly twice the length of time which any one can expect to live in the capital of Austria.”

“The smallest mortality in Europe occurs in maritime countries, which are in the vicinity of the polar circle, such as Sweden, Norway and Iceland. This is also the case in countries where, as in Russia, the influence of climate is not aided by civilization, and of itself is sufficient to assume long life to mankind.”

“Countries where the heat is moderate, are not as might be supposed, among those which possess the advantage of a small mortality; to obtain it, they must require the benefits of a high state of social order.”

“The southern countries, the mild climate of which seems to be so favourable to the human race, are, on the contrary, regions where life is exposed to the greatest dangers. In the smiling plains of Italy, the chances of dying are one-half greater than those of cold and foggy Scotland; and under the beautiful skies of Greece, the certainty of life is one-half less than among the ices of Iceland.”

Estimates of the mortality in tropical regions made by Humboldt and others, shows the general pernicious influence exercised by the climate of the torrid zone, the extent of which is however different with the different races of inhabitants; thus for example in 1805, the deaths at Batavia were 1 in 11 of the Europeans; 1 in 13 Slaves; 1 in 29 Chinese; 1 in 46 Javanese. In Bombay in 1815, Europeans, 1 in $18\frac{1}{4}$; Mussulmen, 1 in $17\frac{1}{2}$; Parsees, 1 in 24; Guadaloupe, 1816 to 1824, whites, 1 in $23\frac{1}{2}$; Freedmen, 1 in 35; Martinique, 1815, whites, 1 in 24; Freedmen, 1 in 33; Grenada, 1811, slaves, 1 in 22; St. Lucia in 1802, slaves, 1 in 20.

One of the most interesting statistic views of the mortality in various countries, is that in which the influence of the progress of civilization is exhibited, by comparing the deaths to the population of the same country at intervals sufficiently long to admit of a decided social amelioration. The following exhibits this subject in a very striking manner.

The number of deaths compared with that of the population, was—

In Sweden	- - -	1754 to 1763,	1 in 34;	in 1821 to 1825,	1 in 45
Denmark	- - -	1751 to 1756,	1 in 32;	in 1819 - -	1 in 45
Germany	- - -	1788 - -	1 in 32;	in 1825 - -	1 in 45
Prussia	- - -	1717 - -	1 in 30;	in 1821 to 1826,	1 in 39
Wurtemberg	- -	1749 to 1754,	1 in 32;	in 1825 - -	1 in 45
Austria	- - -	1822 - -	1 in 40;	in 1828 to 1830,	1 in 43
Holland	- - -	1800 - -	1 in 26;	in 1824 - -	1 in 40
England	- - -	1690 - -	1 in 33;	in 1821 - -	1 in 58
Great Britain	- -	1785 to 1789,	1 in 43;	in 1800 to 1804,	1 in 47
France	- - -	1776 - -	1 in $25\frac{1}{2}$;	in 1825 to 1827,	1 in $39\frac{1}{2}$
Canton of Vaud	-	1756 to 1766,	1 in 35;	in 1824 - -	1 in 47
Lombardy	- - -	1759 to 1774,	1 in $27\frac{1}{2}$;	in 1827 to 1828,	1 in 31
Roman States	-	1767 - -	1 in 24;	in 1829 - -	1 in 28
Scotland	- - -	1801 - -	1 in 44;	in 1821 - -	1 in 59

From all which it appears that the mortality has diminished.

In Sweden, nearly $\frac{1}{3}$ d in 61 years; in Denmark, 2-5ths in 66 years; in Germany, 2-5ths in 37 years; in Prussia, 1-3d in 106 years; in Wurtemberg, 2-5ths in 73 years; in Austria, 1-13th in 7 years; in Holland, $\frac{1}{2}$ in 24 years; in England, 4-5ths in 131 years; in Great Britain, 1-11ths in 16 years, in France, $\frac{1}{2}$ in 50 years, in Canton of Vaud, $\frac{1}{3}$ d in 64 years; in Lombardy, 1-7th in 56 years; Roman States, $\frac{1}{3}$ d in 62 years.

The principal towns in Europe present the same gradual diminution, as will be evident from the following proportions estimated for different epochs, viz.

Paris	- - - - -	in 1650, 1 in 25 inhabitants;	in 1829, 1 in 32
London	- - - - -	1690, 1 in 24	do. in 1828, 1 in 55
Berlin	- - - - -	1765, 1 in 28	do. in 1827, 1 in 34
Geneva	- - - - -	1560, 1 in 18	do. in 1821, 1 in 43
Vienna	- - - - -	1750, 1 in 20	do. in 1829, 1 in 25
Rome	- - - in 1762 to 1771,	1 in 21	do. in 1828, 1 in 31
Amsterdam	- 1761 to 1770,	1 in 25	do. in 1828, 1 in 29
Cambridge	- - - - in 1811,	1 in 41	do. in 1821, 1 in 58
Norfolk	- - - - -	1811, 1 in 50	do. in 1821, 1 in 59
Manchester	- - - - -	1757, 1 in 25	do. in 1821, 1 in 58
Birmingham	- - - - -	1811, 1 in 30 $\frac{1}{2}$	do. in 1821, 1 in 43
Liverpool	- - - - -	1773, 1 in 27	do. in 1821, 1 in 41
Portsmouth	- - - - -	1800, 1 in 28	do. in 1811, 1 in 38
Petersburg	- - - - -	1768, 1 in 28	do. in 1828, 1 in 48
Stockholm	- in 1758 to 1763,	1 in 19	do. in 1827, 1 in 26

The causes enumerated, as tending to an increase of mortality, are chiefly—

The marshy humidity of the air, especially in hot countries; the effects of privations on the lower classes of society; the scarcity of the means of subsistence, or, at least, their rise in price as compared with the wages of labour; pestilential diseases; unfavourable seasons, especially abrupt changes in the temperature; the closeness, dirtiness, and unhealthiness of private houses, prisons, infirmaries, and hospitals; the excessive use of spirituous liquors, and indulgence in drunkenness; unwholesome or unremitting labour, especially in childhood and youth; lastly, war, *but less in consequence of battles than forced marches*, and frequently the mal-administration of armies.

The chief causes which in connexion with the progress of civilization have tended to diminish mortality, are—the draining of marshes, and the embanking of streams and rivers; the favourable division of public wealth, which affords to each individual labour and subsistence; the abundance and good quality of the food of the people; the attention bestowed on children from birth, and continued in schools, manufactories, and public establishments; vaccination and sanitary arrangements, which prevent the importation or development of contagious diseases; the low price of the productions of industry, allowing the less affluent classes to enjoy those habits of cleanliness which were equally unknown and beyond their reach, and furnishing them with the means of escaping the intemperateness of the season; lastly, the successful measures adopted for diminishing the insalubrity of towns, and especially colleges, theatres, hospitals, prisons, churches, and other public establishments, which, in many places, are still without the means of ventilation, heating and cleaning.

The editor concludes his interesting observations upon the results of the social ameliorations which have been gradually introduced into European countries during the last century by the following striking conclusions. “If we collect England, Germany, and France in one group, we find, that the average term of mortality which, in that great and populous region, was formerly 1 in 30 people annually, is not at present, more than 1 in 38. This difference reduces the number of deaths throughout these countries from 1,900,000, to less than 1,200,000 persons; and 700,000 lives, or 1 in 83 annually, owe their preservation to the social ameliorations effected in the three countries of Western Europe, whose efforts to obtain this object have been attended with the greatest success.”

“The life of man is thus not only embellished in its course by the advancement of civilization, but is even extended by it, and rendered less doubtful. The effects of the amelioration of the social condition are to restrain and diminish in proportion to the population, the annual number of births, and in a still greater degree that of deaths; on the contrary, a great number of births, equalled or even exceeded by that of deaths, is a characteristic sign of state of barbarism. In the former case, as man in a mass reach the plenitude of their physical and social development, the population is strong, intelligent and manly; whilst it remains in perpetual infancy where generations are swept off without being able to profit by the past, to bring social economy to perfection.”

51. *Statistics of Lithotomy at the Hospital of Incurables, at Naples, for thirteen years.* By SALVATORE DE RENZI, M. D.

Years.	OPERATED ON.		Cured.	Died.	AGE.		
	Men.	Women.			Infancy.	Manhood.	Old Age.
1821	27	0	23	4	12	11	4
1822	28	0	26	2	12	12	4
1823	38	1	31	3	14	15	5
1824	35	2	32	5	15	16	6
1825	38	0	26	4	14	15	1
1826	35	2	32	5	17	17	2
1827	18	1	12	7	7	9	3
1828	25	0	19	6	10	14	1
1829	35	1	31	5	16	18	2
1830	32	3	29	6	15	17	3
1831	31	1	39	2	17	12	3
1832	22	0	17	5	14	6	2
1833	38	1	33	6	23	10	6
Totals.	389	12	341	60	185	174	42

The whole number operated on is thus 401, of whom 60 died, 14 96-100 per cent. or 1 in 7 nearly. In this number, there are comprised two operated on by the method of Scarpa; all the others were operated on by the lateral method modified.

The period during which the patients had laboured under stone, varied from three months to sixteen years. The time of cure was from six days to a month. In 1827, an epidemic verminous fever broke out, which destroyed more than a third of those operated on.

In the bodies of the dead, traces of anterior diseases of the kidneys, bladder, or intestines, were almost always found.

The above table relates to those operated on in the hospital, who are all poor, badly nourished, and badly nursed. The rich are operated on at their own homes.

Every surgeon has a right to operate at the hospital, except one who has been prohibited on account of his proved unskilfulness. It is on that account that the mortality rises to 1 in 7, for skilful surgeons lose only 1 in 20, and M. Petrunti has lost only 1 in 25.—*Gaz. Med. Feb.* 1834.

CHEMISTRY.

52. *New Alkaloids.*—*Sarsaparilline.* “This substance (says M. Thubeuf) is regarded as the active principle of sarsaparilla. Like the original root, it communicates to water the property of frothing when agitated, and gives it that sharp, bitter taste which we find in the aqueous or alcoholic infusions of sarsaparilla. When examined by the microscope, it presents radiated crystals, the layers of

which converge toward their extremities, and it has no action whatever upon turnsole paper. Sarsaparilline, when pure, is white, without odour, and, if it contain no water, is tasteless. It is little soluble in cold water, but the whole is taken up by boiling water, which throws it down again as it grows cold. It is soluble in alcohol, either cold or warm, and the substance may be crystallized in this manner by evaporation. It may be precipitated from its alcoholic solutions by the addition of a little cold water. This alkaloid is insoluble in ether, even at the boiling point, but is very easily dissolved in a warm mixture of alcohol and ether in equal quantities.

“*Atrophine*.—This substance, (says MM. Geiger and Hesse,) already noticed by Brande, has been obtained from the *Atropa belladonna*. It has presented identical properties when obtained from the same part of the plant by different processes. It is white, and crystallizable into bright, transparent prisms, which have a tendency to group together; at the ordinary temperature, water takes up only a hundredth part of the mass. The aqueous solution of atrophine renders turnsole paper blue, when reddened by an acid. It acts on the organ of vision in the same way as belladonna, and even a very weak solution is sufficient to dilate the pupil, which remains in that state for a considerable time. Chlorine has very little action upon it, and it seems to form sub-saline compounds with the acids. The aqueous infusion of atrophine forms an abundant white precipitate with the aqueous infusion of galls, and it forms an orange-yellow precipitate with the hydrochlorate of gold.

“*Hyosciamine*.—This alkaloid is most easily obtained from the seeds of the *Hyoscyamus niger*. It crystallizes into transparent, colourless needles. Its taste is acrid and disagreeable, like that of tobacco, and it has a powerfully poisonous action. The smallest quantity, placed on the eye, produces permanent dilatation of the pupil; in an anhydrous state it is not alkaline, but becomes so by the addition of a small quantity of water. The salts of hyosciamine are neuter, they are partially crystallizable, and are as poisonous as the plant itself.

“*Daturine*.—This alkaloid has been extracted by the same chemist from the *Datura stramonium*. It readily crystallizes into regular prisms, which are colourless and brilliant. It is inodorous. The taste is at first slightly bitter, and then becomes very acrid like that of tobacco. Daturine is a highly poisonous substance; one-eighth of a grain was enough to poison a sparrow in three hours. When placed on the eye, it occasions a strong and permanent dilatation of the pupil.

“*Solanine*.—This substance, already discovered by several French chemists in the *Solanum nigrum*, *Solanum dulcamara*, and the *Solanum mammosum*, has been recently found in the potato by M. Otto of Brunswick. He obtained the alkaloid in the following manner:—The potato buds were first treated in water, acidified by sulphuric acid; he then separated the sulphuric and phosphoric acids, with the extractive matter, by acetate of lead; the colourless liquor which remained was saturated with lime water, and the precipitate boiled in alcohol; and the product thus obtained was purified by frequent washing in alcohol. In order to determine its action on the animal economy, M. Otto tried the effects of this substance upon rabbits, and found that it should be ranged amongst the acrid narcotic poisons. One grain of solanine was sufficient to kill a rabbit in six hours; a second rabbit, which was much stronger than the former, was destroyed in nine hours after having taken three grains. It exercises a remarkable paralyzing effect on the hinder extremity of the animal before occasioning death, and this paralysis may be produced in horned cattle, by simply feeding them on the washings of potato-tops. This substance is white and powdery, and turns blue turnsole paper which has been reddened by the action of an acid. The greater part of its salts assumes an aspect like gum upon desiccation.

“*Colchicine*.—This alkaloid crystallizes into delicate needles; its flavour is very bitter; when placed in the nares it does not excite sneezing, while the smallest portion of veratrine occasions a violent fit. Colchicine is a strong poison; one-tenth of a grain dissolved in alcohol was given to a cat six weeks

old; the animal began at once to foam at the mouth; after the lapse of an hour she passed abundant alvine evacuations, and vomited; she soon became feeble, unable to walk steady, fell down on the ground, rolled about, and was agitated by convulsive motions; these symptoms increased in severity; the animal died in twelve hours. On examining the body after death, the intestinal canal was found to be violently inflamed, and blood was effused into its tissue through the whole extent; one-twentieth of a grain of veratrine was given to a younger cat, in order to judge of its effects by comparison; they were very inergetic; the animal quickly became feeble, was seized with convulsions, fell on the ground, and died within ten minutes. After death nothing remarkable was discovered except inflammation at the upper part of the œsophagus. This portion of the canal was not inflamed in the cat poisoned by colchicine.

“*Aconitine*.—M. Geiger has found this alkaloid in the leaves of the *aconitum napellus*; it does not seem susceptible of crystallization. When perfectly pure, it is white, grained, and forms a colourless, transparent mass. Its taste is bitter, then acrid, but the acridity is not strong or permanent. In this respect it differs from the plant, whose taste often remains twelve hours, leaving the tongue quite benumbed. The acrid principle is united with the aconitine, from which it may be separated by repeatedly combining the alkaloid with acids. When this substance is completely deprived of the acrid principle, it is excessively poisonous; the one-fiftieth part of a grain, dissolved in alcohol, was sufficient to kill a sparrow in a few minutes, and one-tenth of a grain destroys a small bird with the rapidity of lightning. When placed on the eye it produced dilatation of the pupil, but the effect is of short duration.”—*Journal de Pharmacie, February and March, 1834.*

53. *New Researches on the Composition of the Serum of the Human Blood.* By F. BOUDET.—The object of these researches is to determine the nature of the relation between the globules of the blood and the colouring matter and the serum, and to ascertain the chemical constitution of the latter fluid. M. Boudet takes a general view of all the representations which have been given of the nature of the globules, from the time of Leeuwenhoeck to that of Hewson, Home, Prevost and Dumas, Young, and lastly, Raspail, Donné and Muller. It is well known that Hewson represented the globules as flat orbicular or circular bodies, like coins, but with prominent centres, and that the observations of Prevost and Dumas are in favour of the same idea. Home, on the other hand, inferred, from what he conceived careful microscopic observation, that they were minute spherical bodies, consisting of a central globule, enveloped in colouring matter during life. This idea was also maintained by Young, who considered the central *umbilicus* or prominence as an optical illusion.

The general tendency, in short, of different observations on the constitution of these minute and problematical bodies appears to be, that they consist of two concentric spheroids. The separate and essential existence of the inner spheroid appears to be established, especially by the experimental observations of MM. Prevost and Dumas, and M. Donné and M. Muller. Thus the first inquirer found, that, if dried blood was diluted in a saline solution, the central globules were easily recognised; and that, conversely, when the blood was diluted with pure water, the colouring matter was dissolved, or rather divided in this fluid, and the internal spheres appeared then to be colourless. Donné found, among numerous microscopical observations, that whether he operated on human blood, or that of the frog, the globules were effaced, indeed, when diluted with water on a glass plate; but that, if he waited till the colouring matter had spread over the margins of the plate, he then observed these globules colourless and transparent floating in the fluid, and that it is absolutely impossible to dissolve them in a large quantity of water within a space of more than twenty-four hours. M. Donné, in short, regards the globules as minute bodies of a lenticular shape, formed of a fundamental tissue of fibrine, in the interstices of which albumen and colouring matter are deposited.

Lastly, in a letter recently addressed to the Institute, and inserted in the *Annales des Sciences Naturelles*, (October, 1832, p. 222,) M. Muller adds the following confirmatory statements, derived from the blood of frogs. "The globules of blood are composed of a colourless *nucleus* and red crust, which undergoes gradual solution in pure water, but not in salt or sugared water. After the solution of the red crust in water, the central *nuclei* remain insoluble in simple water, but are dissolved in alkaline water. The most effectual mode of detaching these *nuclei* from their red capsules, is to mix a drop of acetic acid with a drop of blood from a frog, or any other animal, and to observe the effect microscopically. The red crust is instantly dissolved in the acetic acid, while the elliptical *nuclei* remain, and may be examined in their proper form."

From all these testimonies, combined with his own observation, M. Boudet infers, that, whatever discordance prevails on other points, it is certain that the globules of the blood consist of two substances—a colourless and a red colouring matter, and that in configuration they form two concentric spheroids. To us it appears from the facts more natural to represent them as consisting of a central spheroid, and an inclosing spheroidal capsule—both concentric.

On the diameter and size of these globules, M. Boudet merely repeats the inference formerly established by several observers, that though these diameters vary in different species, and much more in different animals, they are invariably the same in the same animal. This might demonstrate the impropriety of transfusing the blood of an animal of one species into the vessels of an animal of a different species. The odorous principle of the blood, he is of opinion, depends on the presence of some volatile acid substance, analogous to those which were found by Chevreul in adipose substances. This opinion derives some probability from the fact, that M. Matteucci, in distilling the serum of goat's blood with sulphuric acid, obtained a mixture of lactic and caproic acid.

On the important question, as to the state in which the fibrin exists in blood, M. Boudet rejects as untenable, the common opinion, that this principle forms part of the globules, partly in consequence of the experiments of M. Le Canu on the colouring matter of the blood, and partly by reason of the experiments of M. Muller, which are entirely at variance with such a supposition.

This observer maintains that the fibrin in the coagulable part of the blood is not contained in the globules, but is dissolved in the serum. To demonstrate this inference he selects the blood of recent frogs, the globules of which are too large to pass through the pores of filters. Having amputated the thigh of a frog, he causes the blood to fall on a moistened filter, and mixes with it an equal quantity of pure water, or rather of sugared water. There escapes a clear liquid, in which is quickly formed a clot of fibrin, which is speedily condensed and becomes white. The globules in the meantime remain on the filter, unchanged and undissolved if sugared water have been mixed with the blood. From this experiment it results, that the coagulation of the blood is not justly explained by referring it to aggregation of the globules. This experiment succeeds in summer, spring, or autumn, but not in winter, because the blood of frogs does not coagulate at this season.

These experiments, M. Boudet infers, concur in showing that the fibrin exists in the *serum* in a state of solution.

M. Boudet has further detected in the blood, at least, its *serum*, the presence of three principles,—two entirely new, which had hitherto escaped analytical examination; and he is led to express the opinion that, as it was only by operating on very large quantities that he discovered the principles alluded to, it is necessary to have recourse to a new mode of analysis, as the circulation and repair of the blood are so rapid that any given quantity taken at any particular point of time may contain mere traces of the substances found to exist. He further thinks, that, if examined in this manner, the blood must contain not only the materials of all the organs, but even the characteristic principles of the different secretions, as cholesterine, urea, &c.

The substances next found in the human blood by M. Boudet are,—1, an alkaline soap; 2, cholesterine; and 3, a fat substance hitherto unknown, and to which he applies the distinctive name of *seroline*.

These substances were obtained in the following manner.

A large quantity of *serum*, formed by the combination of three blood-lettings, being dried by a gentle heat, washed by boiling water, and dried again, was reduced to powder, and treated with boiling alcohol. The alcoholic liquors which had been colourless, became turbid on cooling, and from them were precipitated very slowly white *flocculi*, separable by the filter. These flocculi, which presented the aspect of little adipose pearly plates, slightly translucent, but without crystalline form, were the new principle denominated *seroline*.

Viewed by the microscope, these adipose whitish pearly plates seem to be formed of filaments, swelling at intervals with minute white opaque globules, which give them the aspect of chaplets or strings of beads.

Seroline melts at $+36^{\circ} = 97^{\circ}$ F. evinces no reaction on reacting papers, and reddens, like cholesterine, in contact with concentrated sulphuric acid.

It does not form an emulsion with cold water, and if warmed it swims on the surface of the fluid in the form of a colourless oil.

It is readily dissolved by sulphuric ether even in the cold. It is in no degree affected, on the contrary by alcohol in the cold, and traces only are dissolved in that fluid at $36^{\circ} = 92^{\circ}$ F. and at ebullition.

Subjected to warm *aqua potassæ* for six hours, it undergoes no change, and hydrochloric acid causes no precipitate in such alkaline liquor.

Long heated with nitric acid it is not dissolved, but becomes soluble in *aqua potassæ*, which then acquires a brown colour.

Distilled at the lamp in a glass tube, it emits a very characteristic odour, furnishes alkaline vapours, is partly volatilized, and leaves a carbonaceous residue.

The alkaline soap and cholesterine were obtained in the following manner.

The filtered liquor distilled in the sand-bath, and reduced to one-fourth of its volume, exhibits, upon cooling again, a milky turbidity, yet without remarkable precipitate.

The evaporation being continued, furnishes a residue of a yellowish-brown aspect, of the consistence of turpentine, forming with cold water an emulsion of a bitter taste, and a smell analogous to that of the phosphorated fat of the brain.

This residue triturated cold with alcohol at $36^{\circ} = 97^{\circ}$ F. gave it a yellow colour, and became attached to the tube in the manner of a soft resin. The alcohol was renewed till it ceased to acquire colour, and the mixture was then separated into two distinct products; one soluble in alcohol, corresponding to the only matter of M. Le Canu, the other insoluble in the fatty matter of the brain.

From the first of these left to itself were precipitated, at the end of a certain period, minute crystalline plates, of an appearance analogous to that of cholesterine, and which, indeed, present no material difference of character from that substance.

When the serum after this precipitation was decanted and evaporated to dryness, it furnished a viscid residue of a bitter taste, very soluble in alcohol, and retained some cerebral fat, which was afterwards detached as far as possible by the aid of alcohol, at $22^{\circ} = 72^{\circ}$ F., which appeared to M. Boudet to exercise no sensible influence on the substance. Lastly, he dissolved it in ether, which separated from it some traces of saline matters.

Thus purified, this new product was soft, sensibly transparent, of a bitter saponaceous taste, a little altered by the taste of the phosphorated fat, very soluble in alcohol and ether, sensibly soluble in water, cold or hot, and rendering it mucilaginous, like a genuine soap, and speedily restoring the blue colour to turnsol, reddened by acid. From these characters M. Boudet felt it impossible to mistake this substance for an oily matter, and most probably in the shape of

a genuine soap. He afterwards confirmed this inference by the addition of hydrochloric acid to the watery emulsion upon which drops of oil came to the surface. He regards the soap as a probable mixture of oleic and margaric acids.

M. Boudet regards the oily matter of M. Le Canu as partly alkaline soap, partly *seroline* and cholesterine.—*Journal de Pharmacie*, June, 1833, and *Edinburgh Med. and Surg. Journ.* April, 1834.

54. *Composition of Serum—Serolin.*—M. BOUDET remarks, that except the saline constituents of the serum of human blood, and the extractive matters, imperfectly known by the names of ozmazome, impure lactate of soda, muco-extractive matter, &c. the only well defined substances shown by analysis to exist in the serum are albumen, the fatty matter of the brain, urea, and an oily matter.

M. Boudet did not examine the extractive matters dissolved by water from dried serum, but only those products which were obtained from dried serum by boiling alcohol, after the water had dissolved such as were soluble in it.

Having obtained a considerable quantity of serum, dried it, and dissolved all that was soluble in boiling water, it was again dried, and treated with boiling alcohol: the mixed alcoholic solutions were colourless. The mixture became turbid by cooling, and deposited, though very slowly, white flocks, which were separated by the filter; these had a fatty pearly lustre: they were not crystalline, but small and slightly translucid plates. In M. Boudet's opinion these plates constitute one of the principles of serum, and he calls it *serolin*. This substance, when examined by the microscope, appeared to be formed of small filaments, with small, white, opaque globules, which gave them the appearance of strings of beads; it fuses at about 134° Fahr.; does not act upon test papers, but, on the contrary, like cholesterine, it reddens concentrated sulphuric acid. It does not make an emulsion with cold water; and if it be heated, it floats like a colourless oil on its surface. Sulphuric æther dissolves it easily, even when cold; on the contrary, alcohol of 0.837 dissolves a trace of it when boiling, and none when cold. Heated for six hours in a solution of potash it suffered no change, and muriatic acid added to the liquor produced no turbidness.

Neither muriatic nor acetic acid, whether cold or hot, produced any change in this substance: when long heated with nitric acid it was not dissolved, but became soluble in a solution of potash and rendered it brown.

Distilled by the lamp in a small glass tube, it emitted a very characteristic odour, gave alkaline vapours and a light coaly residue; part of it seemed to volatilize. The small quantity obtained did not allow of performing more experiments; but the above, M. Boudet thinks sufficient to establish serolin as a new immediate principle, and to justify the name which he has given it.

The alcohol from which the serolin had been separated by the filter was distilled in a salt-water bath, and when reduced to one-fourth of its bulk, the distillation was stopped and the liquor allowed to cool. It soon became turbid, but no material deposit was formed.

By continuing the evaporation in a capsule, a slightly yellowish brown residue was obtained: it was of the consistence of turpentine, and formed an emulsion with cold water. Its taste was acrid, and its smell similar to that of the phosphorized fatty matter of the brain.

This residue triturated with alcohol of sp. gr. 0.837, rendered it yellow, and attached itself to a tube like a soft resin. Fresh alcohol was added until it ceased to acquire colour, and two products were thus separated; one, soluble in alcohol, was of course the oily matter already alluded to, and the other was the fatty matter of the brain; this was insoluble in cold alcohol, but dissolved by it when boiling, and in æther, except a very small portion of a rosy matter, which was too minute for examination. It crystallized in brilliant laminæ, did not act upon coloured test papers, was unalterable by alkalies, made an emulsion with cold water; and its properties were perfectly similar to the cerebral fat, as described by Vauquelin and Chevreul.

The alcoholic solution, exposed for some time to spontaneous evaporation,

gave small crystalline plates resembling cholesterine in appearance. On comparing their properties, it was found that they agreed nearly in their fusing point at about 278° of Fahr.; but they differed in this respect, viz. that pure cholesterine is crystalline, while this substance was in flocks, and had no crystalline splendour: this difference, however, appeared to depend upon its retaining a little phosphorized fatty matter, the odour of which it retained; and on mixing pure cholesterine with this substance, the mixture had the same properties as the supposed cholesterine of the blood. M. Boudet admits, however, that further experiments are required to ascertain positively that the serum of the blood contains cholesterine.

After the separation of this supposed crystallized cholesterine, the alcoholic solution was evaporated to dryness: it furnished a viscid residue, of an acrid taste, and soluble in alcohol. It still, however, retained cerebral fatty matter, which was separated as much as possible by alcohol, of sp. gr. 0.915, this appearing to have scarcely any action upon it: lastly, it was dissolved in æther, which separated from it traces of saline matter.

Thus purified, this new product was soft, somewhat transparent, of an acrid and soapy taste, slightly altered by phosphorized fatty matter, very soluble in alcohol and æther, and sensibly dissolved in water either cold or hot, and rendered it frothy like a true soap. Lastly, it restored the blue colour of litmus reddened by an acid; it appeared therefore to be a true soap. To decide this question, it was dissolved in hot water, and a few drops of muriatic acid were poured into the solution: abundant flakes were separated from a transparent liquid, and melted at the surface with the appearance of an oil. This oil after washing with hot water, retained no muriatic acid, reddened moistened litmus paper strongly, made no emulsion with water, and dissolved rapidly in alcohol and æther, rendering them acid: it immediately combined with soda, and reproduced a solution resembling common soap: it was probably a mixture of oleic and margaric acid.

M. Boudet remarks, that numerous attempts have been made to discover bile in the blood, and he further states that the existence above described of an alkaline soap, and probably of cholesterine, show that bile, or the various substances of which it is composed, are actually found in the blood.—*The London and Edinburgh Philosophical Magazine, &c. February, 1834, et Ann. de Chim. et de Phys. tom. lii. p. 337.*

55. *Presence of Azote in all Seeds.*—It was known that some seeds contained azote; wheat is a striking example of this, since it furnishes gluten, a substance containing a large proportion of azote; but no one has hitherto announced that all seeds contain an animalized matter.

M. GAY-LUSSAC, has subjected a great number of seeds both in their natural state and deprived of their husk, to dry distillation and he has not found any which does not yield ammonia, either immediately or on the addition of some lime.

Many seeds, as rice, yield on distillation very acid products, whilst beans and most of the leguminous seeds furnish very ammoniacal products; but on adding lime to the former, the presence of ammonia is readily demonstrated.

From this M. Gay-Lussac concludes that in general, a grain without its envelope, may be considered as formed of two parts, one vegetable, which yields an acid product; the other animal yielding an ammoniacal product. Thus the acid or alkaline character of the product depends upon the predominance of one of these two matters over the other.—*Annales de Chimie, May, 1833.*

AMERICAN INTELLIGENCE.

Medical Education in Georgia. [Extract of a Letter from PAUL F. EVE, M. D. Professor of Surgery in the Georgia Medical College, to the Editor.]—With respect to the state of our profession in Georgia of which you requested me to inform you, I will observe that we hope a favourable change is about to be exercised by our medical college in this place. Six years ago a medical institution was attempted here under the appellation of a Medical Academy, by Dr. Antony, now our professor of midwifery. This not succeeding, or at least not being encouraged by a reciprocity of favours from the medical institutions of our country, the charter was extended by the legislature of 1829–30, to the power of granting diplomas under the same requisitions as other medical colleges. As a college, the first course of lectures was delivered by the six professors in the winter of 1832–3. Our class consisted then of twenty-eight or twenty-nine students. Four alone of that number were candidates, and the degree of M. D. was conferred upon them by our president last April. At the request of our friends, the application, (on account of the excitement in politics,) for pecuniary aid to the legislature, was withdrawn for this year. Our second session opened with a class of thirty-five—one of whom was virtually expelled the college during the course of lectures for immoral conduct; eighteen were expected to become candidates for the degree; seventeen however, only handed in theses. Of this number fifteen passed a satisfactory examination.

Our last legislature liberally endowed us with \$10,000 cash, and land to the value of about \$5,000 more. We have \$5,000 from the city council for our services to the city hospital for ten years—and a lot has been given us on which our building is now being erected. Besides this, the faculty have raised \$6,000, and have despatched it with an agent, Professor Dugas, to Europe, for apparatuses, &c. &c.: and another professor expects to leave here during the summer for the north to increase our chemical apparatus, and to attend to the interior arrangements of our building. The plan we have adopted is Grecian doric, seventy by seventy-six feet; six fluted columns, portico, dome and stucco-work. Two lecture rooms on first floor with laboratory and library; one above, with museum, dissecting room, &c. The contract is for the sum of \$14,650; to be in readiness for the reception of the class in October next, and completed by 1st of next March.

Besides this medical college, we have a board of physicians which assembles annually at the seat of government in Milledgeville, whose duty it is to examine candidates for licences to practice medicine and surgery in the state. This body has the power to examine a candidate even with a diploma. It is thought, however, our penal code is deficient on this point; we have still quacks among us, but comparatively few. An application from the *Thomsonians* last winter was ridiculed in our legislature, and I believe the publication with respect to the licence to practice in the state, induced the well-known impostor Whitlaw, to leave our city quite suddenly.

As the graduates of our first commencement were not furnished to you, and were not published, I will first give you a list of them for the Journal, and if you can find room for them in the next number, you will very much oblige us and your humble friend.

At the first commencement of the Medical College of Georgia, held the 17th

of April, 1833, in Augusta, the following gentlemen having complied with the requisitions of the institution received their diplomas.

Edward A. Eve, of Georgia, on Dyspepsia.
T. W. Grimes, of Georgia, on Dysentery.
Isaac Bowen, of Georgia, on the Blood, *in Greek*.
J. M. D. Borders, of Georgia, on Asthma.

At the commencement held in the Baptist Chapel on April the 16th, 1834, in Augusta, the following gentlemen received the degree of doctor of medicine.

A. W. Jones, of Georgia, on Revulsives.
M. W. Peters, of Georgia, on Bilious Fever.
B. D. Brewster, of Georgia, on Gastritis.
William Gilbert, of South Carolina, on Pleurisy.
D. Day, of Georgia, on Scarlatina.
J. C. Cobb, of New York, on Injuries of the Head.
Y. B. Olive, of Georgia, on Dropsy.
Jon. Toole, of South Carolina, on Remittent Fever.
James M. Lester, of Georgia, on Indigestion.
S. H. Brewster, of Georgia, on Goitre.
J. W. Earle, of South Carolina, on Typhus Fever.
Horace Neison, of Ireland, on Medicinal Effects of Cold.
E. W. Richardson, of Georgia, on Syphilis.
A. B. Greene, of Georgia, on Asiatic Cholera.
Paul H. Earle, of South Carolina, on Hydrocyanic Acid.

Dr. Brewster proposes pressure for the cure of goitre; by means of two springs coming from back of neck with pads so as to operate laterally upon the tumour, and lift it as it were from the trachea.

Dr. Paul H. Earle's experiments with the prussic acid have led him to fear bad effects from a dose of seven drops, prepared after the method of Scheele; he has himself taken that quantity, but laboured under unpleasant symptoms for some time.

Augusta, April 17th, 1834.

Case of Spinal Irritation.—The following case possesses peculiar value, from the relator, Dr. ANDREW NICHOLS, of Massachusetts, being himself the subject of it. "To the correctness of Teale's essay," remarks Dr. N. "so far as it describes my own case, I can bear the most decided testimony. Several of the symptoms are common to this and other very different diseases; but, whenever we meet with any of these symptoms, the spine should be carefully examined, and, if a tender spot or spots be found, this tenderness must be cured before we can remove the complaint. If the disease should prove complicated, then, indeed, even removing this tenderness may not cure, although it will probably greatly alleviate the suffering and pain. In regard to the means of doing this—leeching, cupping, and blistering—recommended by Teale, I can also speak decidedly in favour of their efficacy. At a time when both my arms were so lame and painful that I could use them only with the greatest difficulty, four leeches, applied to the lower vertebræ of the neck—even before they dropped off—removed this lameness almost entirely. Like effects followed cupping and blistering. But the irritation would soon return, and acquire a repetition of the remedies. In this way the complaint was kept in check, but little, if any, progress was made towards recovery. Teale does not tell us the cause of this, which I soon found to be the following of one of his own directions—the confining myself most of the time to a horizontal position!—the real cause of the sudden return of the irritation, being continued *pressure* on the spine. The sufferer from this disease cannot lie long on his side, because the nerves of the

arms, sides, hips, or lower extremities—the seat of the neuralgia—cannot bear pressure, but are made immediately painful by it. Hence the patient *involuntarily* turns on his back—pressure is consequently made on the seat of the disease; but, as this part is seldom the seat of much pain, the mischief is not readily discovered. He perhaps, if worn out with watching, sleeps. The spine is no longer relieved by the little motion he gives himself while awake. The pressure is continued perhaps an hour or two; and he awakes with all his neuralgic affections aggravated in a tenfold degree. It is only by the greatest effort that he can change his position. His back is still the easiest part; but there is acute pain, numbness, soreness, and all the protean forms of neuralgia, throughout the course of the nerves, which proceed from those tender parts of the spine, suffering from pressure. Having satisfied myself of these facts, it became my study to protect the spine from pressure. By the careful adjustment of feather-beds and pillows, while awake and on my guard, a tolerably easy position could be obtained and preserved for a short time. But sleep would invariably disturb this comparatively easy position, permit pressure on the tender parts, and restore the irritation and all its consequent mischiefs. I was therefore compelled to consider the direction in the books, for confining the patient to horizontal position, erroneous. I now sought relief by sitting up as much as possible. Such became my dread of the bed, from the increased uneasiness which invariably met me there, that for several days I sat up eighteen out of the twenty-four hours. Œdema of the lower limbs came on, for the relief of which recourse was had to bandages. In this way, by continuing the blisters and leeching, I slowly gained on the complaint. In the mean time, I had turned my attention to Dr. Arnott's hydrostatic bed—believing this, if, in reality, all that the journals describe it to be, the all-important means of curing this complaint in the most expeditious manner. I accordingly put in motion a train of operations, which, on the 27th ult. put me in possession of one in complete order. It proved all that I had anticipated. At nine o'clock, P. M. I threw myself upon it, and laid more at my ease than I had been in any position since my confinement, for nearly twelve hours—having had during that period nearly six hours of quiet sleep, without any increase of neuralgia. From that hour I have found myself constantly and regularly improving. Leeches or blisters have not since been used. The whole extent of the spine has been well rubbed twice a day with the following liniment:—℞. Tr. opii, Ol. oliv., Ol. terebinth.—equal parts.

“The lameness of my limbs is nearly removed. The urine, which, up to March 1st, had been during my confinement high-coloured, depositing a thick sediment, resembling brick-dust, and which stained the white earthen vessel in which it stood a short time, of a bright crimson colour, is now clear, and no longer deposits any sediment. I have indulged my appetite with a tolerably generous diet. Food digests well, which, by the way, has been the case throughout—having always relished food, excepting occasional periods of nausea from medicine. The antiphlogistic regimen was, however, rigidly adhered to until after the hydrostatic bed was obtained.

“I am now convalescent, gaining strength hourly. In reviewing the history of my case, I am inclined to attribute the commencement of spinal irritation to a sudden injury of the back, by jumping down from a block about two feet high, upon the ground. A sudden pain seized me in the back, which remained considerably lame for several days.* From this time some trifling soreness about the sacrum, lameness of the hips and shoulders, was felt daily. This, however, was but little noticed. During the last week in January, and the first week in February, these symptoms were gradually aggravated, and attendance on my various professional and other duties, became irksome, and I felt myself compelled to give them up. I now used liniments to the limbs, took purgatives, colchicum, and other medicines, for *rheumatism*—lounged on sofa, *easy chair*, or bed—grew constantly worse—no care being taken to preserve the spine

* “This happened about Christmas.”

from pressure: for, as yet, although I had a knowledge, doubtless somewhat superficial, of irritation of the spinal marrow, and occasionally practised according to the recommendation of the authors above quoted, strange as it may seem, I was permitting this disorder to make dreadful inroads on my own health and comfort, without even a suspicion of the true cause. And when, from a hint from Dr. A. L. Pierson, the truth burst in upon the mind, another week was nearly lost, in consequence of keeping a recumbent position on a feather bed. Hard and slow the progress towards recovery was made by sitting up most of the time, until the possession of the hydrostatic bed removed the chief obstacles to recovery. After the discovery of the true nature of my case, I abandoned the use of internal medicine altogether, satisfied that the curative process could not be materially advanced thereby. It would seem that the public have not yet realized the immense importance of Dr. Arnott's invention—have not yet perceived its very general application to the relief of all, who, from any cause, are compelled to assume, for days or weeks, a recumbent position. The medical journals, so far as I have seen, have only given Dr. Arnott's modest account of the uses to which it may be applied, without recommending the invention, as it deserves. But when we consider of how great importance ease of position must be to almost every curative process—be it of a broken bone, acute, or chronic disease—the hydrostatic bed becomes, so far as human comfort is concerned, the most important invention of the age.

“The vast number and form of diseases, arising from irritation of the spinal marrow, and ganglia of the sympathetic nerve, and the probability that a great number of other diseases, such as fevers, &c. often become complicated with, and rendered fatal by spinal as well as cerebral irritation, caused, perhaps, by confinement to beds, which, instead of giving rest, irritate the spine, by too constant pressure—render it highly probable that the hydrostatic bed will, as soon as its value is generally known, save many lives, and an amount of human suffering vastly greater than imagination has yet conceived. Besides, even for the healthy it is a most luxurious bed—warm, dry, and easy. In point of comfort, it so far exceeds all other couches, that it will be strange indeed, if it should not come into extensive use for the common purposes of rest.”

Tumours of the Neck. By N. R. SMITH, M. D. Professor of Surgery in the University of Maryland.—*Case I.* The remarks of Allan Burns on tumours of the neck and the practicability of their removal in certain cases, appear to me to inspire the young surgeon with too much dread of resorting to the knife in such instances. The situation of tumours in relation to the fascia of the neck, has, in my opinion, been too much regarded in determining the question of their removal. Mr. Burns perhaps, being the first to demonstrate particularly these expansions, was naturally disposed to make them of as much importance as possible in a practical point of view. From his remarks we should infer, that when a tumour is situated below the deep lamina of the cervical fascia, it can not have continued long and acquired any considerable magnitude, without establishing serious connexions with the important organs of the particular region in which it may chance to be located. This is undoubtedly true with regard to those tumours which speedily impart their peculiar nutritive actions to the surrounding parts; but by no means so in regard to those which are enclosed in cysts. I have often known them to be so forcibly pressed against other organs as to receive the impression of them without establishing any adhesion. I am satisfied from my own experience in the removal of such tumours, that the caution of Mr. Burns relative to their extirpation when they chance to be situated beneath the fascia, is far too strongly expressed.

In the winter of 1830, I visited Mrs. Gilliland, aged about twenty-five years, the wife of a farmer living near Gettysburg, Pa., for the purpose of examining a large tumour situated in her throat. I found it to be located on the right of the thyroid cartilage, under the border of the sterno-cleido-mastoid, and having the omo-hyoid muscle strained directly across its centre. It was of course com-

pletely beneath the deep fascia, and was in immediate contact with the sheath of the great vessels. Its form was ovoidal, its size that of a large goose's egg, and it occupied nearly the whole space from the angle of the jaw to the clavicle, creating great deformity. Its long diameter corresponded to the length of the mastoid muscle. It was very firmly bound down by the mastoid muscle and fascia, and was moved with great difficulty beneath them. I first satisfied myself that it was no portion of the thyroid gland. I also convinced myself that it did not involve in disease the great vessels and nerves of the neck. That by its mechanical pressure it irritated these organs was sufficiently manifest, for there existed a train of symptoms evidently resulting from mechanical pressure on the pneumogastric nerve. The stomach was much impaired in its functions, her appetite being capricious, and food often occasioning much distress in the organ soon after being taken. She was also sometimes affected with nausea, diarrhœa, alternating with costiveness. There was also not a little embarrassment of respiration. She suffered severely with occasional pains in the head, on the side corresponding to the disease. The pulse also gave evidence of considerable constitutional irritation.

The tumour had an elastic feel, which caused me to doubt whether it was encysted or sarcomatous. I am not positive as to its duration, but my impression is, that it had been several years in arriving at the magnitude then present.

After a careful examination of the case, in association with my friend Dr. Berluchy of Gettysburg, we decided that the extirpation of the tumour was in all probability practicable, and I expressed a willingness to undertake it; not without much apprehension, however, on account of its relations to the deep fascia, blood-vessels, and nerves. The patient and friends immediately assented to the proposition.

I commenced the operation by incising the integuments and platysma muscle along the border of the sterno-cleido-mastoid muscle to the whole extent of the tumour. Dividing the fascia of the neck, I encountered the omo-hyoid muscle, drawn like a ribbon obliquely across the tumour. From its extreme tension I found it necessary to divide it, and thus the tumour and its immediate coverings were completely exposed. I then carefully, with the director and knife, divided many layers of cellular tissue which enveloped it, and at length exposed the proper cyst of the diseased mass. This fortunately I found to be but little adherent to the surrounding part. I was enabled, indeed, to effect its division to a great extent by the use of the handle of the knife alone, occasionally, however, finding it necessary to divide a band of cellular tissue. The tumour had kept itself perfectly distinct from the surrounding parts, which every where presented a perfectly healthy appearance. On dissecting it carefully from its bed, I found that it had been so firmly pressed against the great vessels, and against the cartilages of the larynx, that it had received distinct impressions from them. The great vessels were lodged in a furrow on its inner and posterior part, but were separated without any considerable difficulty. I found it necessary to secure no artery until I had removed all its connexions except a small pedicle of vessels which attached it to the deepest part of the wound. These I included in a ligature, and then divided them.

On the removal of the tumour, an immense chasm presented itself in the throat, the cartilages of the larynx were completely exposed, and the great vessels stripped from near the clavicle to the angle of the jaw. I closed the integuments by means of three interrupted sutures assisted by adhesive strips, and brought the parietes of the wound into contact by means of an elastic compress. The tumour presented, on dissection, the medullary sarcomatous character.

The patient necessarily suffered severely during the operation, but I left her soon after in a more comfortable condition than might have been expected. As I subsequently learned from Dr. Berluchy, she recovered rapidly. A great part of the wound healed by the first intention, and the cicatrix formed in such a manner as to cause but little deformity. Those symptoms of gastric disorder

and constitutional irritation, which I had supposed to arise from the mechanical pressure of the tumour, totally disappeared. She recovered health and strength, and subsequently became the mother of a vigorous child. She still remains in good health.

Case 2.—Mr. Winrotte, of Littlestown, Pennsylvania, a farmer, aged about forty-two, became a patient of the Baltimore Infirmary, in the winter of 1828, on account of a large tumour located upon the side of the throat, and circumstanced almost precisely as the last described. Its form and size were almost precisely the same, and like it, it was covered by the anterior border of the mastoid muscle and by the omo-hyoid. Symptoms extremely like those present in the case of Mrs. Gilliland, were present in this instance. Deglutition, however, was more seriously affected, owing as I thought to the greater degree of power with which the muscles urged the tumour upon the trachea and larynx.

On a careful examination I became satisfied that the removal of the tumour was practicable. My friend, professor Davidge, however, was rather averse to such an attempt, and cautioned me in regard to it. The patient was desirous that it should be performed, and I determined to proceed. The operation was executed, (in presence of the medical attendants and pupils of the infirmary,) in a manner almost precisely similar to that described in the last case. No blood-vessels of any considerable magnitude were divided, and but a single ligature was necessary. Much pain in the region of the wound followed the operation, and great difficulty of deglutition. These, however, subsided after a few hours, and the condition of the patient became comfortable. He left the infirmary in about a week after the operation, the wound having nearly healed. I saw him some six months subsequent to this, and there was then present no appearance of disease whatever. The tumour proved to be the medullary sarcoma.

After the lapse of about a year from the time of the operation, I learned by letter from his medical attendant, that a tumour of forbidding appearance had presented itself in the cicatrix which had resulted from the operation. I was soon after requested to visit him, and to attempt the removal of the disease once more with the knife. But I found the tumour presenting a totally different aspect from that which it was in the previous instance. It was now hard, knotted, closely adhering to the surrounding parts, and excessively painful. I could not by any means withdraw it from its vicinity to the great vessels and nerves, and any attempt to do so caused great pain. I attributed this, however, in some measure, to the adhesions which the cicatrix had caused. He suffered almost constantly, extreme pain in the head, shooting up from the region of the tumour along the course of the great vessels and nerves. There existed a great degree of gastric disorder, and not a little embarrassment of respiration. He was now suffering great constitutional irritation, his strength and flesh were rapidly wasting, and it was manifest that unless speedy relief was rendered, the case must soon come to a fatal conclusion.

I expressed doubt with regard to the practicability of the removal of the tumour, because of its close adhesion to the surrounding parts, and the symptoms indicating involvement of the blood-vessels and nerves of the neck. I determined, however, to make an incision upon it—to ascertain its connexions, and then to effect its removal if practicable. Accordingly, in the presence of my friends, Drs. Shorb and Miller, and several of my pupils, I divided the integuments on the inner side of the cicatrix, and proceeded to explore its connexions. After cautiously dissecting it from the muscles, and separating its external connexions, I introduced the finger into the wound, and made gentle efforts to detach and separate the tumour from the vessels. While I was in the act of doing this I felt something give way to a gentle effort of the finger, as if some soft substance were ruptured by it, and instantly the wound, the table, and the floor was deluged with dark blood.

I immediately discovered that the internal jugular vein had become involved in the disease, and that its coats, having become soft and brittle, had been largely rent by even the slight traction which had been made upon them. The

vessel appeared also to have become enlarged, and, as by the struggles of the patient, the irregularity of breathing, and the action of the heart, the blood was pressed with great force from the cava into the jugular, the hæmorrhage was truly appalling. Hæmorrhage from the carotid, I am confident could not have been so rapid. It bubbled so copiously from the wound, that in an instant, and before I could press my thumb into the bottom of the cavity, the floor was covered with blood, and the patient fell back inanimate, and as if dying. Respiration and circulation being thus suspended, I was perfectly aware that instant action, before any reaction should occur, was necessary to save our patient from death on the operating table. I opened the wound more freely with the knife. I removed the friable portions of the tumour—I exposed the vein, and found it torn open down close to its junction with the subclavian. I then seized an armed needle which was at hand, and at the moment that the patient was reviving, and that blood began again to gush, I passed a strong ligature beneath the vessel, and secured it close behind the clavicle. This was done with some apprehension, lest I should include the pneumogastric nerve. After encircling the vessel, however, I satisfied myself that the nerve was not included, and immediately drew the knot. There was still a good deal of venous hæmorrhage from the upper orifice of the wound, and an oozing of arterial blood from the remainder of the diseased medullary mass. It was manifest that the coats of the artery also were involved and converted into the peculiar structure of the disease, and that any further effort upon the latter would at once produce an arterial hæmorrhage. I therefore at once closed the wound, and applied to it as the most efficient compress which could be used in that region, a soft sponge. The bleeding immediately ceased, and slight pulse returned in the extremities. The patient was carried to his bed, and although he suffered greatly, and was much reduced, immediate dissolution was no longer threatened.

I was obliged to leave my patient, to return to Baltimore soon after the operation, but the conclusion of the case was related to me by Dr. Shorb, of Littlestown. He survived the operation about ten days, and then sunk apparently from exhaustion. It is manifest therefore that he could not have perished from phlebitis, which by some is supposed almost necessarily to arise from the application of ligatures to veins of such very large size, and in a diseased condition.

Another fact is worthy of particular notice. At the moment that blood was gushing most copiously from the wound—when the patient was fainting, and the inspirations were unfrequent, deep and strong, I distinctly heard a bubbling of air as it was sucked into the vein. I apprehended at the moment, that immediate death would be the consequence, but I am not aware that any particular morbid phenomenon resulted from it.—*Baltimore Med. and Surg. Journ.* July, 1834.

Claims of British Surgery, to the Triumph of First applying a Ligature to the Common Iliac with Success.—In an article in the Medico-Chirurgical Review, for January last, (p. 278,) announcing the successful result of the case in which Mr. Guthrie, on the 24th of August last, (1833,) applied a ligature to the common iliac artery, the editor observes, “thus this most formidable operation has been successfully performed for the first time, and while it adds a wreath of laurel to the brows of the distinguished surgeon, it exhibits a splendid triumph of British surgery.” Our cotemporary has been too hasty in claiming this triumph for British surgery, and has placed the laurels on brows not destined to wear them. The distinguished surgeon to whom the wreath justly belongs is our colleague and countryman, Dr. Mott, who, upwards of *seven years since*, (March 15th, 1827,) successfully applied a ligature to the common iliac, see No. I. p. 156, of this Journal. Dr. Mott’s patient, we learn, *is still living*.

It is not a little singular, also, that Mr. Guthrie, in his work, “On the Diseases and Injuries of Arteries,” p. 365, should have recorded Dr. Mott’s case as No. XXVIII.—August, 1834.

fatal, more especially when he extracts the account of the operation from this Journal, in which the *entire restoration* of the patient to health is explicitly mentioned.

Surgical Novelties.—Our friend, Dr. Vaché, of New York, writes to us that Professor MOTT has tied the left subclavian artery, for axillary aneurism, with success. Also that the same distinguished operator has tied both carotids simultaneously, with the view of cutting off the circulation, and thus arresting the growth of an enormous disease of the parotid gland. The patient survived about twenty-four hours.

Dr. Mott has likewise extracted from a man an enormous calculus, measuring nearly twelve inches in circumference, and weighing upwards of seventeen ounces, avoirdupois. Every effort to crush and bore it having failed, Dr. M. extracted it entire, and as it was as large as the lower aperture of the pulvis, great violence was of course done to the soft parts. The case terminated fatally on the fifth day. The patient had suffered many years, and was very much reduced.

Table exhibiting the Doses and Properties ascribed to the Principal Medicines and Officinal Preparations. For the use of the Materia Medica Class of the University of Maryland. By Professor DUNGLISON.—This is a very convenient, neatly arranged table.

Testimony to Professional Merit.—Certain citizens of Pine Ridge, Adams county, Miss. have presented to Dr. SAMUEL A. CARTWRIGHT a splendid vase, with a suitable inscription, as a testimonial of their sense of his eminent services, in the year 1833, during the prevalence of cholera.—*Natchez Courier and Journal*, May 9th, 1834.

Transylvania University.—262 students attended the medical lectures in this Institution during the session of 1833-4.

At a public commencement held on the 14th of March, 1834, 66 were graduated Doctors in Medicine.

Medical College of the State of South Carolina.—The number of medical students in this Institution during the session of 1833-4, was 103.

At the annual commencement 39 were graduated Doctors in Medicine.

University of Virginia.—Dr. AUGUSTUS L. WARNER has been, we learn, unanimously and unsolicitedly appointed by the Board of Visitors of the University of Virginia, Professor of Anatomy, Physiology, and Surgery, in that flourishing Institution. Dr. W. has been delivering with great reputation private lectures on Anatomy and Physiology in Baltimore for the last four years, and he will, no doubt, do honour to himself and to the Institution to which he is now attached.

New Publications.—We have been requested to announce, that Dr. J. R. COXE, Professor of Materia Medica in the University of Pennsylvania, has in press and will speedily publish a work, entitled “An Inquiry into the Claims of Dr. Harvey to the Discovery of the Circulation of the Blood; wherein is Demonstrated the Injustice of those Claims, and an Attempt made to place this Discovery on a more Equitable Footing.”

Also that Dr. ALEXANDER C. DRAPER is preparing for publication, “A Treatise on Mania a Potu, containing Observations on its History, Pathology, Symptoms, mode of Treatment, &c. with Preliminary Inquiries into the Nature and Laws of Irritability or Organic Force.”

We shall take the earliest opportunity after their publication of making our readers acquainted with these works.

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